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OF THE

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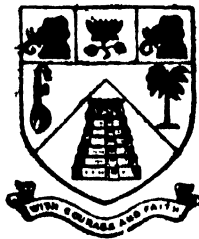
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Editorial

Self-expression is no less essential to a University than to an individual. The need has been felt for some time past for a publication embodying the original work done by the members of the University in order that such work might be placed permanently on record. This Journal has been started in order to meet this need. As the University has been in existence only for a short period, it is inevitable that the early numbers of the Journal should contain some articles which are largely informative in character rather than entirely original contributions to knowledge. We have no doubt, however, that with the passage of time and the proper organisation of facilities for research work at the University, the Journal will in increasing measure embody the results of original investigation and research. Meanwhile, we hope, it will serve to provide incentive and direction to research workers in various fields, while catering at the same time for the general reader.

We rely for the success of our venture upon the hearty co-operation of the members of the University and we wish to assure them that all their contributions will receive the most careful attention of the members of the Editorial Board.

The Journal will, as at present arranged, be published twice a year.

ANNAMALAI UNIVERSITY, }
ANNAMALAINAGAR. }
April, 1932.

Editor.

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Journal

OF THE

Annamalai University

VOL. I

APRIL, 1932

No. 1

The Convocation Address

DELIVERED BY

RAO BAHADUR S. E. RENGANADHAN AVERGAL, M.A., I.E.S.,

Vice-Chancellor of the University

on Tuesday, the 27th October, 1931

Mr. Chancellor, Mr. Pro-Chancellor, Members of the University, Ladies and Gentlemen :—

On the occasion of the first Convocation of this University, we beg to offer to Your Excellency, our Chancellor, a most cordial welcome and to express our gratitude to you for the kind interest you continue to take in this young institution. We extend an equally hearty welcome to our Founder Pro-Chancellor, to whose munificence the University owes its existence and to whom we are deeply indebted for constant encouragement and unfailing helpfulness.

Universities have grown in the past from various beginnings and have shaped themselves under the stress of various circumstances. Some of them have grown under the shadow of the mediæval church in Europe, some have owed their existence to the patronage of kings and nobles, while others, like most modern universities in India and other parts of the world, have been founded by the State. The establishment of this, the youngest of the Indian universities, however, though it was most liberally aided by the Government of Madras, is largely due to the wisdom and generosity of a single public-spirited citizen of South India, Rajah Sir Annamalai Chettiar of Chettinad, and we all rejoice that his noble benefaction has been commemorated for all time by the association of his name with this foundation. It is appropriate to an occasion such as this, that we should recall to our minds the aims and ideals which actuated the Founder in the establishment of this University and consider to what extent the University is endeavouring to achieve those purposes.

Speaking in 1926 at the opening of the Science buildings of the old Sri Minakshi College, which now forms a part of the University, the Rajah Sahib said :—

“Since days long past, Chidambaram has been a great centre of culture in South India and has enlisted the devotion alike of her warriors and kings, saints, philosophers and poets. It has often struck me that at Chidambaram, if anywhere in South India, there is a great opportunity for working on chosen lines and to noble ends that synthesis of the great cultures of the East and the West which is the prime task of our country and of her educational institutions at this hour.”

And again in the statement which he made regarding the growth of the University at the inauguration of the Senate by His Excellency in March 1930, the following sentences occur:—

“ This University owes its existence to two factors, which I shall, with your leave, detail here to-day. First and foremost is the hearty and enthusiastic response that the Government of Madras has been giving to endeavours of private philanthropy and secondly the desire of the eighteen millions of Tamil-speaking people in this Presidency and abroad also to nurture a centre of learning, to give to the world the value of Tamil learning, literature and culture.

The idea of a Tamil University is as old as the College from which this University has sprung. In the early years of this decade, a motion was brought in the Senate of the Madras University that the question of starting a Tamil University be taken up for consideration. Educationists who had set their hearts on the scheme brought it now and then to the notice of the public till the idea of a linguistic university was taken up by the Andhras and worked up to success by the incorporation of the Andhra University Act in 1926. Government appointed in 1926 a Committee to examine the subject of establishing a University for the Tamil districts. The witnesses before the Committee were largely in favour of a separate University for the Tamil districts for several reasons. The Committee considered it desirable to have unitary teaching universities and as many of them as the country could afford to support in a good condition. The establishment of one such university (at Chidambaram) has been made possible by the signal response that the Government of Madras chose to give to private effort in the year 1928.

The main features of the Annamalai University Act are: (i) the provision made for research; (ii) the adequate representation of the teaching element in the various authorities of the University; (iii) the institution of a unitary teaching residential university with the concomitant advantages of an active social life among the teachers and the taught; (iv) the attempt at rehabilitating oriental culture by a special faculty of Oriental Studies; (v) the proper financial backing of the University by an endowment and the securing of sound financial expert advice by means of a Finance Committee for the infant stages of the University.”

The aims and objects so clearly and eloquently set forth by the Founder are in keeping with the trend of the best educational opinion and indicate the true lines of advance in the sphere of University education in this country. The Indian University system, its organisation, policy, purposes and methods have been subjected to a great deal of criticism in recent years. The excessive emphasis laid on the examination system in University education, the conception of education as a mere economic device for qualifying men for government posts, the absence of any real intellectual training, low academic standards, the ineffectiveness and unreality of University studies owing to their lack of correlation with the social and economic life of the people, the neglect of the study of Indian art and culture, have been rightly pointed out as some of the most conspicuous defects in that system. Educational

reconstruction of a far-reaching character has, however, been undertaken within the past ten or fifteen years in order to remedy some of these evils. Not only have a number of new universities of the unitary, teaching and residential type been established but even the older affiliating and examining universities have made some provision for teaching and research. So far as the evil association of University education with Government appointments is concerned, it is worth noting that partly owing to growing unemployment among graduates, partly because of the setting up of Public Service Commissions with their own methods of recruitment, and partly also because of a change in outlook, the number of those who seek a degree merely as a passport for public service is steadily on the decline.

One of the most commendable features of recent educational reform in India has been the recognition by the universities that the extension of the domain of knowledge should be the highest goal of their effort. It will, I think, be generally admitted that too little thought has been given to this aspect of University work in the past. But within the past few years, many of our universities have begun to make provision for research and to realise both that a University will to a great extent be judged by the quality of its advanced work and that the more elementary training of the undergraduate derives no little part of its strength from the research work of its teachers and scholars. It is a matter of daily experience that teaching which consists merely in the repetition of stereotyped information tends to lose vitality and to cease to interest or inspire. A teacher's interest in his subject can only be kept fresh if he continues at the same time to be a learner. He must be constantly adding to his knowledge, either by personal research or by keeping himself abreast with the research of others. It is one of the main aims of this University to promote as far as possible original investigation and research in all the departments of study included in its faculties, in humanistic studies as well as in the field of pure science. It is hoped to achieve this purpose by the provision for the teaching staff of adequate leisure and opportunities for the prosecution of research, by suitable changes in the methods of instruction to the more advanced students, and by the institution of studentships and fellowships for postgraduate work.

Every effort is made also, wherever possible, to bring the subjects of study into close and intimate connection with the students' environment and the life of the community. There exists provision in the University for advanced teaching in the English, Sanskrit and Tamil languages and literatures, in Physics, Chemistry and Mathematics and in Indian History, Politics, Indian Philosophy and Economics including co-operation, and rural economics. Several of these studies have a direct bearing on the social, economic and cultural life of the people and should equip the student with knowledge which will be of real service to the country. We have endeavoured to maintain as far as possible a balance of studies between the humanistic disciplines and modern science and between western knowledge and oriental culture. There is, however, an insistent demand that we should go further and include applied science in our scheme of studies. I am aware that there is provision in the Act for a faculty of technology and that the esteemed Founder is anxious that

something should in due time be done in this direction. While it may be freely conceded that technological studies are necessary for the industrial development of India, it is still a matter for careful consideration whether a small University like ours with its strictly limited resources would be wise in undertaking an enterprise which is not only extremely costly but which is likely to affect detrimentally the work which it has already started doing. It has to be remembered that the quality of the work turned out by a University is of far greater importance than its quantity and variety. It is much better, in view of our present resources that the University should do a few things well than that it should undertake schemes which are far beyond its financial strength. The cost of equipping a high grade technological department is so great that it seems to me that this is a matter in which all the Universities in South India may well co-operate when conditions are more favourable. Among them they may cover a fairly wide range of technological studies, each University addressing itself to those branches of study which local or other conditions determine as appropriate. This division of labour, accompanied by freedom of interchange of students between the Universities, would greatly promote both economy and efficiency. It is also to be hoped that wealthy industrial magnates and businessmen in South India will come forward with generous endowments to enable the University to achieve this object.

But the demand does not stop with technological studies alone. There are again those who urge that University education should be brought into line more and more with the actual needs of modern life by the inclusion of a variety of practical and vocational subjects. There is a danger, I admit, of Universities remaining too cloistered and academic, isolated from the main currents of life flowing round them. But while we may agree that the University system should change with the changing times and should be in conformity with the conditions and legitimate needs of the day, we should guard against the greater danger of the adoption of subjects and courses of a too narrowly utilitarian character, which have little or no cultural value. Let us never forget that the supreme function of a University is not so much to fit men for specific tasks as to train their minds and give them a vision of knowledge in its true proportions and perspective. The University bears testimony to the sovereignty of ideas and ideals in this world. It exists for the advancement of learning, the cultivation of the things of the spirit. Its vital essence is a spirit of eager and disinterested search for truth and of zeal for the increase of knowledge. In the words of a modern English poet, its function is

to build exultingly

High, and yet more high,
 The knowledgeable towers above base wars
 And sinful surges reaching up to lay
 Dishonouring hands upon your work, and drag
 From their uprightness your desires to lag
 Among low places with a common gait.
 That so Man's mind, not conquer'd by his clay
 May sit above his fate,
 Inhabiting the purpose of the stars
 And trade with his Eternity.

The Founder has referred in the remarks which I have already quoted from his statement to the attempt which is being made in this University at rehabilitating oriental culture by a special faculty of Oriental Studies. This is a direction in which this University is well fitted to produce work of the utmost value and importance. South India is the home of the most ancient culture of the country. It has been said that Dravidian civilisation of a highly developed character can be traced back to the second and third millenniums before Christ. Even foreign scholars have borne testimony to the perfection with which the Tamil language has been developed into an organ for precise and subtle thought, and to the beauty and richness of the literature which is contained in it. Dravidian architecture as seen in the great shrines of Chidambaram, Conjeevaram and Madura and Dravidian music reached a high degree of development several centuries ago. South Indian history and archaeology, Dravidian literature, philosophy and art offer therefore a rich and fruitful field for exploration and critical investigation.

It is our aim that the University should play a large part in the revival and development of Oriental studies. These studies will be pursued not in a spirit of uncritical glorification of all that is old merely because it is old, but from a modern scientific point of view so that we may arrive at a just appreciation of all that is of real value and beauty in our past heritage. The study and interpretation of inscriptions and coins, of iconography and temple architecture, the publication of critical texts of the ancient classics, the collection of old vernacular manuscripts and their elucidation, the comparative study of Sanskrit and Dravidian languages for the light it may throw on the mutual influence of these great cultures in the past, the scientific study of South Indian music, and the enrichment of vernacular literatures either by translations or original compositions are some of the directions in which the University will, it is hoped, make its distinctive contribution to knowledge. I am glad to be able to announce in this connection that the University has taken over the management of the Rajah Annamalai College of Music and of the Oriental Training College and that the Founder has made a generous endowment towards their maintenance.

I have spoken so far largely of the academic aspect of University work. But a University, though first and foremost a place of learning and research, has another equally important function to fulfil. Its duty is to mould and shape the character of its students, not only by the training of the intellect but by the discipline of spirit so that they may be fitted for citizenship and may worthily fulfil their responsibilities towards society. This intellectual and moral discipline seems to me of the greatest importance at the present day when the national character is changing under the stress of the political, economic and social convulsions of our time. The residential universities are fitted by the organisation of their social and corporate life to provide this training and discipline in larger measure than universities of the older type. It is evident that if the University is to do this effectively, its teachers who live and work in close association with the students should be men of the highest character, able to exert a powerful influence for good upon the ideals and conduct of their pupils.

Provision has been made in this University for the residence of nearly 500 students in hostels and resident tutors have been appointed to give individual guidance and advice to the students. The University Union has been constituted on the model of those of the older universities in England, so that the conduct of the affairs of the Union is largely in the hands of the students themselves. So far as the health of the students is concerned, every student undergoes a medical examination annually and there is provision for the physical training of all undergraduates. In these and other ways it is our object to give an all-round education, an education of body, mind and character which will fit the students for the duties and responsibilities of life. They obtain not only in the formal studies of the University, but in the daily contact of their minds in the hostel, the Union and the debating society, and in their association for games and athletic exercises of various kinds, a training—largely their self-training—which strengthens and develops their character, gives them a wide outlook, inculcates a spirit of give and take which is the bond of society and instils into them a strong sense of duty. They are made to realise here that discipline is not opposed to freedom but is complementary to it; that the final aim of all discipline is the development of self-control and that without such self-control and intelligent self-direction, freedom would degenerate into licence. It is to be regretted that there is abroad a spirit of restlessness and disquietude, of rash and unthinking opposition to authority among young men in India to-day. I shall not go into the reasons for the prevalence of such a spirit; but I would fain hope that it is only a passing phase. The task of the universities is, however, in regard to the development of character, made doubly difficult by such a situation. But they cannot abandon their duty in this respect. They have to devise every possible means of training the rising generation by intellectual and moral discipline, for the great responsibilities which await them.

I have indicated some of the directions in which the University is endeavouring to carry out the aims of the Founder and to be of service to the country. The development of the University in all these directions will necessarily take time. It has to be remembered that this University is not only the youngest in India but the youngest of all the universities in the British Empire. I had recently the honour of representing the University at the Congress of the universities of the Empire which was held in Edinburgh. When I was there, I discovered with a due sense of humility that I represented the youngest of all the seventy universities which had sent delegates to the Congress. My humility was not, however, unmixed with a sense of exhilaration and pride when I realised that though the youngest, this University had entered into the great brotherhood of all those universities, great and small, which had sent representatives from all parts of the Empire. This very ceremony of Convocation, with all its attendant ritual so reminiscent of mediæval Europe, is a reminder to us of the catholic character of universities and indicates the brotherhood which unites men of learning throughout the world. The University is yet very young. Time has not mellowed its walls, nor can it boast of poetic groves and sculptured halls. It has yet to build up its traditions. But it has great compensations. It has entered into

possession of all the knowledge and learning of the past and the present. There are, luckily, no protective duties and no tariff barriers for the commerce of the mind. While sharing with the older universities the common purpose of conserving and extending knowledge, it can profit by their past experiences and avoid their mistakes.

It has also its great responsibilities. It should not be a mere slavish imitator of other universities, but should build up a vigorous and distinctive individuality of its own. Though it should adapt itself to modern needs and conditions, it should be uncompromising in its loyalty and devotion to learning and scholarship and maintain the highest academic standards. It should above all, unceasingly endeavour to increase the sum of human knowledge and to make that knowledge available for the benefit of mankind.

I have said already that South India has been the home of the most ancient culture of the country. The south is also the part of India which has been longest under the influence of Western civilisation and thought. Is it then unreasonable to cherish the hope that in the universities of the South more than anywhere else, there will be evolved a modern Indian culture which will combine the best elements of Western civilisation and of our inherited tradition? It is only by the combination of the science and learning of the West and all that is good and great in oriental culture that India can march along the road of progress and take her place among the nations of the world. I hope and believe that this University will, in the fullness of time, make an effective contribution towards the development of such a culture and thus render service of the highest value to the country.

Graduates of the year,

I congratulate you most heartily, on behalf of the University, on the success which has attended your efforts, and on your admission to the degree of Bachelor of Arts of the University. The fact that you are the first batch of candidates to be so admitted by the University, while conferring an added privilege, imposes on you a correspondingly greater responsibility. The honour and good name of your *Alma Mater* are in your keeping. The University will be largely judged by your life and conduct. Let it be your earnest endeavour, therefore, so to conduct yourselves that the fair name of your University may never be tarnished.

I spoke in the earlier part of my address of the aims and objects of the University, so that you may carry away with you a clear conception of what the University stands for and labours for and that you may help it to achieve its purposes in all possible ways. The future development of the University largely rests with you and your successors. Some of you will, I hope, return to it as its teachers. But even if you do not do so, maintain your connection with the University by visits to it either for mental and spiritual refreshment or for the renewal of old associations and friendships. Seek to interest your friends in the work of the University and build up a sound public opinion in South India which will help to support and mould the University in the future.

Whatever your position in life, none of you can escape, in these days, from some responsibility in helping to shape the destinies of your country and in influencing that current of changes, social, political and economic which is sweeping along with a quickening course. You will, I hope, by reason of the training and culture you have received at the University, bring to bear on the solution of the many problems which will face you, a wide outlook and a balanced mind, the ability to discriminate between what is merely trivial and what is important and the capacity to consider and review all relevant facts dispassionately. You will cultivate a due sense of proportion and check that intolerance which sometimes springs from the dogmatism of confident youth. In the conflicts of classes and in the struggles of parties, you will endeavour to understand the points of view of the opposing sides and give your adherence and support to the cause of truth and justice. When appeals are made to your patriotism, you will be able to judge for yourselves whether the sentiment appealed to is of a worthy or an unworthy kind. Patriotism is a great and noble virtue, but it is an emotion which is capable of being exploited for unworthy ends and ignoble purposes. See to it that you interpret your patriotism worthily and direct it along fruitful channels of service for your country. There is no greater challenge to enlightened patriotism in India to-day than the social and economic condition of the masses. The improvement of the physical well-being of the people by the spread of a knowledge of sanitation and hygiene, the provision of medical relief, the devising of methods for the economic betterment of the agricultural classes, the removal of their social disabilities, and the spread of education in the villages offer scope for the patriotic energies of hosts of our educated young men and young women.

The main part of this work of building up a healthy and prosperous nation, able to understand intelligently the world in which it lives, can only be done by ourselves. It is true that the necessity of such work is widely realised in India to-day. But what little has been done in this direction has been the expression of individual good-will, and is utterly inadequate to meet the situation. Larger organised efforts are necessary if there is to be any appreciable improvement in the condition of the masses. Education particularly is a field of service of vital importance for the whole process of making India fit for self-government. Constitutional self-government cannot become a reality until there grows up a well-informed controlling public opinion among the masses. Such a public opinion can only come into existence when education is far more widely spread than it is at present. Let the spread of knowledge among the rural masses, then, be an object of constant solicitude to you. Remove the reproach which has been cast against university graduates in the past that they have shown no sympathy with the masses of their ignorant countrymen and have done little or nothing to alleviate their condition. Even if professional duties should absorb a large part of your day, find time to engage in some form of social service, and either by the publication of suitable vernacular books or by the conduct of night schools and all forms of adult education work carry enlightenment to those who sit in darkness around you. These foundations have been

laid, these halls have been built, and these teachers of yours have been appointed not for your peculiar and personal benefit, but with the avowed purpose of benefiting, influencing and elevating through you the large numbers of those whom higher education cannot reach.

Do not forget that the key to the progress of the country lies in the education of its women. It is indeed true that South India is in advance of other parts of the country in respect of women's education, but the number of educated women is still infinitesimal compared to the general population. It is a most encouraging sign of the times that there has been a general awakening among women themselves in regard to their social disabilities and that they have begun to demand their emancipation. Do all that lies in your power to aid them in their efforts, and see that social customs and practices which have hitherto stood in the way of their development are so modified that they are free to grow in mental and moral stature and become at once the companions of your intellectual life and active partners with you in the task of building up a new India.

Communal jealousies and antagonisms are another serious hindrance to the progress of the nation. These antagonisms can only be mitigated by men of good-will and broad outlook belonging to the several communities co-operating in common tasks for the welfare of the nation. Do all that lies in your power to remove these communal and religious prejudices and to promote a spirit of enlightened citizenship.

You have to-day undertaken a solemn obligation. Not only have you promised to be good citizens, promoting the cause of morality and upholding social order and the well-being of your fellow-men, but you have also promised to conduct yourselves in daily life as becomes members of the University and to promote the cause of sound learning. I have already said something in regard to your duties to others. May I close with a word of advice as regards the duty you owe to your own intellectual and moral life? I hope your education and training here has not only given you knowledge of various kinds but has implanted in you a desire to pursue your search for further knowledge and has introduced you through your study of literature to the companionship of great thinkers and great writers. I hope you will keep up the habit of reading throughout your lives as a means not only of increasing your knowledge but of quickening your imagination and enriching the quality of your thought. There is, I am afraid, a great deal of truth in the criticism that the reading of Indian students is largely confined to their text-books and that once they have passed their examinations they give up the habit of study. I hope that this will not be true of you. The study of English has opened to you the whole realm of modern knowledge and has introduced you to a literature of unsurpassed richness and beauty. But I would not have your reading limited to English literature alone. I am not one of those who believe that the study of English necessarily implies the neglect of vernacular or Samskrit literature. It should be the aim of every educated Indian to be familiar with some of the great works contained in all these literatures, if not in

other literatures as well. For great literature has the power of edifying and elevating us, of quickening our feelings, of widening our mental horizon and of enriching our experience of life.

I hope all of you are carrying away with you in addition to the information you have gathered and the knowledge you have acquired of your several subjects of study, the vivifying influence of some great thoughts, the memory of some rich spiritual experience, the inspiration of some lofty ideal, which will enable you to translate your knowledge into action and impel you to spend yourselves in the service of your country. But ideals grow dim with the passage of time. Enthusiasm dies down and aspirations become less ardent as the heavy weight of the passing years clings about our feet. The companionship of great and wise writers will, in such moments of langour and weariness, sustain and cheer you and rekindle your enthusiasm.

May God, the Giver of every true and good gift, light your ways and bless your goings. May He lead you into the green fields of happy and successful work and by the pleasant waters of noble and unselfish service for the good of your fellowmen.

The Teaching Profession in English Literature

BY

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The teaching profession has been treated copiously in British letters. The learned professions have all in fact been so treated. But the schoolmaster in particular has been the theme of almost every considerable man of letters from the author of *Holofernes*—not to go to earlier artists—to the creator of *Phyllotson*. Sometimes we get full length portraits; sometimes stray but telling strokes of characterisation. The sympathetic enthusiast exalts the good work of the teacher and his indispensable role in society. The indignant satirist cries out against the monster's multitudes of sins. The bantering humorist holds those sins up to ridicule. All, in a word, or almost all consider, in one way or another, this "noblest of professions and sorriest of trades" in their pages.

English Literature has in many instances painted Teaching dark. It has claimed the right of the satirical poet (as Dryden defined it ¹) to the full and has "through and through cleansed the body of the infected world" of teachers. Very nearly five out of ten literary portraits of the schoolmaster are either solemn indictments or scathing satires. The poor fellow may wince but the critic would not budge.

Describing the personal appearance of the professional teacher Literature would make him out as thoroughly contemptible. The teacher has an ugly face. He renders it more ugly by putting on peculiar expressions. Behold Dominie Sampson when he pronounces his inevitable "pro-di-gi-ous". He has an awkward figure. There is no proportion in his limbs. His gait would make him, if that were possible, even more awkward. Erasmus Holiday has an old worn-out gown—pure mediæval cut—fantastical in the making and more fantastical in the wearing. How can this man or any of his fellows of the profession inspire respect even in the Dicky Sludges? He amply incurs contempt on all hands. In company he is either made the butt of ridicule or (what is more damagingly significant) scrupulously ignored. In his class room the very children make faces at him from behind his back. Little Tom Brown's behaviour in the Vale of White Horse is not a solitary instance of the kind.

This deformed frame encloses a mind equally deformed; "Deformed" is exactly the word for it. The schoolmaster's mind, cries out the man of letters, is never formed on proper lines. He cannot, for the life of him, understand the world. He lives in a world of ideas, of abstraction, a world idealised and never real. He has his being in the

¹ The Preface to the Fables, paragraph 7.

midst of children ; children are innocence itself ; and "innocence" is but another word, in the practical man's dictionary, for ignorance of the world. He is all his life absorbed, like the mathematician and mad philosopher of Laputa, in his theoretical problems and his books. Erasmus Holiday is better acquainted with all the mazes of the present and the preterite of Latin verbs, regular and irregular, than the way to Wayland Smith's cave. Dr. Strong is completely absorbed in his Greek Grammar. He has neither time nor inclination to ascertain what sort of man Jack Maldon is. His life-long estrangement from the practical world has made him incapable of knowing the Iagos from the Cassios. The very rooks of the place would cock their heads slyly, suggests Dickens, as much as to tell poor Dr. Strong that they know more worldly affairs than he.

The schoolmaster is therefore no figure in society. He cannot enliven company with one stroke of fresh wit or humour. He cannot instruct grown up humanity with any shrewd observation on the motives of human action or on the lineaments of human character. His talk can never inspire or elevate his hearers. He for ever shows off his learning and makes an insufferable bore of himself. His speeches are never-ending strings of quotations. He says nothing without citing Quintillian or Tully in his support. Never would he pause to consider whether his hearer is either inclined to listen to him or able to follow him. Holofernes would speak Latin alike to Byron and Dull. The pedant in De Quincey's *Spanish Military Nun* considers the conjugation of Latin verbs the most important item on his life's programme. His cousin Catilina, the nun flying from the authorities of her convent, seeks his protection ; he explains to her the processes of declension and conjugation. These poor fellows have a pathetic faith in the supreme importance of accidence and syntax. They do not know that it does nobody any good and only exposes them to ridicule.

The worst of it is that they consider the grammar and idiom of an utterance—spoken or written—vastly more important than its subject-matter. They think it a disaster deliberately wrought to the world by an impassioned orator, if he commits a split infinitive or uses an inappropriate preposition. How would the oration, say, on Conciliation with America, have impressed a contemporary Holofernes ? That pedant would have gone home from the meeting talking all the way to Nathaniel *not* on the political and economic results of conciliation as advocated by the great statesman-orator, but on the questionable grammar of the sentence : "They will appear by examining into the plans which have been proposed". To the professional schoolmaster the evils of wrong grammar are more fatal than a disastrous line of policy. The tailor in Moliere, grown connoisseur, pays more regard to the cut of a garment than its capacity to protect the wearer from wind and weather. Excellent sense of proportion, that !

How then can the schoolmaster be a safe guide to the young ? The man of letters roundly denies that he is. The schoolmaster is irredeemably absorbed in his book. His vision is hopelessly confined within its covers. He cannot help therefore curbing jealously all originality and healthy exercise of imagination in the child. Dr. Busby

punishes all departure from accepted tradition with stripes administered with traditional lavishness. De Quincey complains that the school-master's role among us consists simply in rendering us unable to see the wood for the trees—in sacrificing sublimer knowledge for a baser one. "In spite of all that the villain of a schoolmaster has done for the ruin of our sublimer thoughts", says this writer, "which are the thoughts of our infancy, we still believe in no such nonsense as a limited atmosphere."¹ Cowper throws the matter of this proposition into verse and tells us

"No nourishment to feed his growing mind
But conjugated verbs and nouns declined,
For such is all the mental food purveyed
By public hackneys in the schooling trade."²

Teachers called "public hackneys" and Teaching "the schooling trade"—how complimentary to the profession!

This does not deserve the name of knowledge—this that the "public hackney" imparts. The legislature in every country favours the teaching profession; it insists on a certificate of attendance at a school on the part of every one that claims to be literate. It thus adopts a system of Protection in favour of schools. Under a system of free trade in knowledge, many who draw pay now as teachers will find their occupation gone. The arrogant schoolmaster may be filled with the conviction that he is the possessor of the most difficult kind of knowledge. He may claim that that knowledge could hardly be obtained by any pupil by private study. He may insist that he who seeks to obtain it by private study must be instantly taught his limitations. But the presumption is patently insufferable. The late Mr. Hardy knocks it on the head with a piece of sledge-hammer-satire and shows the school-master his place. Jude ("the obscure") sends a letter to Tetuphenay, a teacher in Christminster, to inquire if learning could be acquired by private study. Tetuphenay delays his answer long and then tells his correspondent that he had better not make himself ridiculous by aspiring to learning. This gives Mr. Hardy an occasion for his well-called-for satire against that presuming dunce of a teacher.

But there are authors who would have it that even this book-learning with its deplorable limitations many schoolmasters culpably lack. They simply deserve to be hounded out of the places which they unworthily fill. Dickens paints in this way, the picture of Mr. Creakle, the head-master of Salem House. The fellow knows nothing. In fact, he originally never designed himself for the schoolmaster's life. He was forced into it like many another of his profession (as Mr. Stephen Leacock would tell us) by failure elsewhere. Here is the picture in almost the very words of Dickens:—

"The fellow knew nothing except slashing and caning. He was more ignorant than many of his own boys. He had been a hop dealer and had taken to the schooling-business after becoming bankrupt in hops."

¹ *The English Mail Coach*; ii. The Vision of Sudden Death.

² *Tirocinium*; 11. 618-621.

Worse in this respect, as in every other, is Mr. Squeers of *Nicholas Nickleby*. This fellow is a huger cipher in point of knowledge. Look at his orthography. He writes *bottiney* for *botany*. He is literally a highway-man turned schoolmaster.

Creakle and Squeers will live for ever as instances of schoolmasters horribly ignorant of letters. But others besides novelists and satirists have drawn the portrait in like colours and with a like brush. Dr. John Brown, the distinguished educationist, is no romancer and never trifles with big issues like the ignorance of a fellow whose profession is to teach ; and this Doctor has this story to tell of a schoolmaster :—

In a school in Perthshire, the annual inspector stepped into a Geography-class and asked the boys what Sheffield was noted for. Dougal Cratur—the top-boy perhaps—readily answered “Cutlery, Sir.” “What does “cutlery” mean?” was the next question. Silence was the answer. But that was not the worst of the matter. From the look and actions of the teacher it was evident that he himself did not know the meaning of the word.

If, in fact, the pages of literature may be trusted, most schoolmasters are a despicable lot. They are like the mediæval mechanic, in a story told by Mr. Augustine Birrel. The mechanic was asked by his pupils why wedges cut wood ; he naively answered that wedges cut wood because of an irresistible inclination in wedges to cut wood. They are like that notorious teacher of chemistry who showed his boys sulphuric acid in a yellow bottle and, being asked why sulphuric acid was yellow, indignantly asked in return why the sky was so high.

Worse even than the head is the heart of the schoolmaster. The fellow may be ignorant of the world ; but one may be sure that he is never so ignorant of it as not to reach his own selfish ends by clever means. He is full of low cunning. When the school-child's parent is by, the fellow is as full of affection for the little thing as Mr. Bumble for young Oliver Twist in the presence of the inspector. But when the parent goes away, the child knows nothing but the rod and starvation. Francis, the fourth Viscount of Castlewood, accompanies young Henry Esmond to Cambridge. The tutor is all solicitude to guardian and ward alike. But the moment the Viscount leaves, the scene suddenly changes and young Harry is a man of straw.

And then, if the boy's parent is a person of consequence, the schoolmaster is meanly obsequious to the boy. If he is a poor man, woe, woe literally, unto the child. Mr. Buck, the tutor, gets a letter from Dr. Portman, the Bishop, on behalf of young Arthur Pendennis ; and Arthur's extravagant ways and lofty carriage seem to argue him the owner of one of the richest estates in England. Mr. Buck therefore treats him with marked deference. But the moment the truth about Pen's riches is found out, all Buck's consideration for the young man vanishes. Such is

the tutor rough to common men
But honeying at the whisper of a lord.¹

¹ Tennyson, *The Princess*, 11. 114-115.

These mean fellows have likewise a mortal dread of grown up, rich or influential boys. The dread is in exact proportion to the heartless tyranny they exercise over little, weak or poor boys. Creakle is inexpressibly afraid of Steerforth while to Traddles he is simply a brutal tyrant. The villain would humour Steerforth by any means—even by impiously dismissing poor Mr. Mell, a teacher in the school. He would add a lie unto that fault and say that he did it to save the honour of Salem House.

In the matter of exacting money, they beat Shylock thoroughly hollow. They get money for the boarding and tuition of the child. But the little fellow feeds worse than a dog in the school. The tuition the child gets does not deserve to be called such, though the sum charged is vastly more than what would be warranted by really efficient schooling. Then the fond parent sends much money as pocket allowance to the young one. But the luckless little fellow sees not a farthing of it all. Squeers, nobly backed up by Mrs. Squeers, gets large sums of money from parents. But the only thing his pupils learn in Dotheboys Hall is the very useful art of living on nothing a year, not to speak of the even more useful art of living as few days as possible in a world which never seems to have had patience with them. Mr. and Mrs. Squeers! They justify more than all others in the teaching line, Cowper's damaging statement about the profession :

Much zeal in virtue's cause all teachers boast,
Though motives of mere lucre sway the most !¹

It is perilous to commit children to the care of these monsters. Some would not, some could not and the vast majority do not execute the trust at all worthily. Why then send children to schools? Young Tullivers and Wakems would be all right, if they had nothing to do with the Stellings. The products of schools do no one any credit ;

Great lawyers, lawyers without study made
Churchmen in whose esteem their best employ
Is odious, and their wages all their joy,
.
Fops at all corners, lady-like in mien,
Civited fellows, smelt ere, they are seen,
.
All these and more like these were bred at school

The above picture of the schoolmaster is no compliment to the profession. But Literature tells also of another side to the picture. The ranks of teachers are not exclusively composed of fools and knaves. To every portrait of a teacher of the questionable sort presented above, can be opposed a portrait, pleasing and brilliant enough to vindicate the profession. Dominic Sampson is indeed ugly in features and awkward in speech and behaviour. He fills all, from Meg Merrilles to the

¹ Tirocinum: 11. 516-517.

² *Ib.*: 11, 822-840.

laundress, with contempt. But his is a noble heart and vindicates the trust and affection of Bertram of Ellangowan. Mr. Mell is certainly "poor as a church-mouse". But

In misery's darkest cavern known
His ready help is ever nigh.

The non-teacher may pique himself on his superior knowledge of the world and hold the teacher in contempt. But Dr. Strong's estimate, and not Mr. Wickham's, of Mrs. Strong's purity proves after all the correct one. The lawyer, with his "shrewd suspicions" and "his prudent admonitions" has to accept defeat. "Dr. Strong", says Dickens, "was the kindest of men with a simple faith in him that might have touched the stone hearts of the very urns upon the wall". And if Cowper advises the parent not to send the child to school but to do the teaching himself, here is Dickens assuring us that the children that passed through the hands of Dr. Strong could face the world with every assurance of success:

We all felt (asserts David Copperfield) we had a part in the management of the place and in sustaining its character and its dignity. Hence we became warmly attached to it—I am sure, I did for one, and I never knew in all my time of any other boy being otherwise—and learnt with a goodwill, desiring to do it credit. We had noble games out of hours, and plenty of liberty; but even then, as I remember, we were well spoken of in the town and rarely did any disgrace by our appearance or manner to the reputation of Dr. Strong and Dr. Strong's boys.

Not all the parents in the world with their parental interest in children could thus send out boys into the world made fit to face its realities and solve its problems as one Dr. Strong with his infectious goodness and enthusiasm could. If you run your eyes through the pages of Literature ever so cursorily, thousands of Dr. Strong's will stand out to glorify the profession. What Charles Lamb says of Mr. Boyer at Christ's Hospital is known to almost every schoolboy. Mr. Boyer, "rabid pedant" as he was, managed to "manufacture" great men out of little boys and fill Anglo-Saxondom with them to an extent and in a manner Anglo-Saxondom must be proud of and grateful for. The portrait of Dr. Arnold of Rugby, not in Findlay's biography of that great and distinguished teacher, but in that common schoolboy's book, *Tom-Brown's Schooldays*, is an undying monument to the school-master's glory and gives the lie direct to the ignorant world's convenient assumption¹ that the teacher thinks more of his pay than of his duties. This Dr. Arnold was ever "with all his heart and soul and strength striving against whatever was mean and unmanly and unrighteous in our little world". He was "the true sort of captain for a boy's army". He "won his way to the hearts of the great mass of those on whom he left his mark and made them first believe in him and then in his Master". Speaking of this famous head-master, "He was a goodly

¹ Gibbon says so explicitly in the *Autobiography*.

teacher", you cry out, in the vein of Horatio. "He was a goodly man ; take him for all in all", I rejoin, in that of Hamlet. *He* could satisfy, as his great son justly claimed, "the gaunt and taciturn host", and what was more, could make his weak and erring fellowmen likewise satisfy him.

Dr. Strong and Dr. Arnold, verily Heroes as Teachers! But heroes as they are, they have one fault in them : they are faultless supermen according to these literary portraits. Would not a hero be more loveable and worshipful just for a touch of the frailty of the flesh in him—just for a touch, that is, of humanity? The greatest of the novelists of our own century knew he would be and portrayed his Hero-Teacher, Mr. Phillotson, as a real human being exposed to temptations, often yielding to them, struggling hard against them and on the whole overcoming them. This Phillotson leaves a certain place to take work in another and the children in the former cry. He is as passionately attached to his pupils as they are attached to him. His figure recalls to our minds that of Mr. Marton, the poor pedagogue in *OLD CURIOSITY SHOP*, who identifies himself with his scholars, who weeps bitterly for the death of the top-boy of his class, and who, in the midst of obloquy and contempt and insult and material privation, is

As some tall cliff that lifts its awful form,
Swell from the vale and midway leaves the storm.

For,

Though round its breast the rolling clouds are spread,
Eternal sunshine settles on its head.

Phillotson's brothers in the profession think him eccentric and call him his own worst enemy because he declines to keep his wife enslaved to him body and soul. But the literary critic must hasten to make them see that Phillotson is eccentric only in the sense that he disdains to take mean advantage of tradition ; and that he is his own worst enemy only because he follows what he thinks right "in the scorn of consequence." Oxford and Cambridge have been often stigmatised as "nests of commonplace schoolmasters whose characteristic is timid obsequiousness to tradition" ; if only those time-honoured seats of learning were manned by Phillotsons, how free they would be from this blame and how "great centres of high and fearless thought" in reality they would prove !

Literature has thus considered both sides of the question. It has done "even handed justice." On the one hand, the schoolmaster is ugly in features, awkward in movements, contemptible for his ignorance, repulsive in his assumption of airs, despicably mean in his devices to make money ; he does not know his own job ; he has no true knowledge to impart ; he is a dealer in shoddy ware and merits nothing but scorn. But on the other hand, there are thousands in the profession who are full of knowledge and of the power to transmit it ; who are wise of head and noble of heart ; who are truly philanthropic in their desire to propagate light and heroically self-sacrificing in throwing away all rosy chances in life and embracing this "sorriest of trades" ; who create an atmosphere wherever they go, congenial to the growth of mental and moral health and but for whom the stability and progress of society

would be scarcely possible. A great Indian national man of letters tells us that the pupil draws his knowledge from the preceptor exactly as the living world draws its vitality from the sun.¹ A great English national man of letters addresses the schoolmaster in language that makes him out the most useful member of the commonwealth.

Sir, I praise the Lord for you, and so my parishioners; for their sons are all well tutored by you and their daughters profit very greatly under you; you are a good member of the commonwealth.²

But for these great teachers who wring eulogy from all quarters, willing and unwilling, but for the Arnolds and Stronges, Philistinism which a great Arnold loudly bewailed and warred with would come to stay with us. Culture would vanish and noble ideals yield place universally to sordid ends. Critics of Teaching in and outside Literature refuse to recognise this great role of the teacher in society and reckon it already undue grace shown to him if he is just tolerated. But to them Literature offers a needful corrective. If they insist that the teacher is good for nothing except administering stripes to the pupil, Newman assures us that in the noble shades of the Attican schools everything was "influence" and nothing was "discipline". If they still remain unconvinced, let us refer them to the ancient gurukulas of this land and the Sabarmatis of modern days. If Mr. Stephen Leacock tells us that fellows found useless in other walks of life take to Teaching, as did Mr. Creakle, let us refer him to Adam Smith who assures us "that almost all the great writers of Greece had been engaged in the business of education."³ And if the hostile critic contends that the teacher is ill-equipped for his task and cannot give his pupil his money's worth, the poet proves this contention a myth when he dwells on the pathos of the condition of Leonard the schoolmaster:

And deeply skilled in science and arts,
On vulgar lads he wastes superior parts—
Alas! what grief that feeling mind sustains,
In guiding hands and stirring torpid brains.
He whose proud mind from pole to pole will move
And view the wonders of the world above,
Who thinks and reasons strongly—hard his fate,
Confined for ever to the pen and slate:
True, he submits, and when the long dull day
Has slowly passed in weary tasks away
To other worlds with cheerful view he looks,
And parts the night between repose and books.
Amid his labours, he has sometimes tried
To turn a little from his cares aside;
Pope, Milton, Dryden with delight has seized,
His soul engaged and of his trouble eased.⁴

¹ Raghuvamsa—Cano V., 4.

² Love's Labours Lost, Act IV, Sc. ii, ll. 68, 71,

³ Quoted by J. A. St. John in a foot-note on page 469, Vol. 3 of Milton's works.

⁴ Crabbe, The Borough; Letter XXIV; Schools.

Let it also be borne in mind that Milton and Johnson and Carlyle and a host of others whose names humanity will never willingly let die belonged to the schoolmaster's profession. Who will now accuse the teacher of questionable mental equipment? There are of course many who would infer the teacher's inefficiency or lack of sense of duty solely from the pupil's ignorance. But, Boswell's account of Johnson's Edial School falsifies the contention. Johnson's pupils confidently stated, at the end of a year's course of instruction in English History, that Jesus Christ abolished the monasteries. But is this necessarily a commentary on Johnson's work with them? We know the author of the *Rambler* and of *Rasselas*. We know his contribution to thought and letters. We know that his table-talk has immortalised him as an English national *Institution*. His case puts it beyond the shadow of doubt that the pupil's ignorance or his failure in an examination is at best a dubious test of the teacher's qualifications and that, tested by that alone, the teacher is "more sinned against than sinning." It is consoling, however, to reflect that, even tested according to this standard, Teaching has in thousands of instances acquitted itself nobly and that, while Literature is coming more and more impartially to recognise the share of the teacher in the advancement of civilization, History (recent and current) is backing up Literature by affording such shining examples of genuine intellectual greatness and moral worth as the late Mr. Gokhale, President Wilson and our own Rt. Hon'ble Sastri.

Village Organisation in the Madras Presidency at the Time of the Introduction of British Rule

By

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I

The Hindu polity of South India cherished, to a great extent, local ties and local strength. Maratha administrative ideas which were later superimposed, retained, in a number of phases, the old village unit, but helped in the replacement of the ancient indigenous officers by their own officials; and they also helped in the partial Hinduising of the administrative terms in those regions where Muhammadan influence had been strong. The village community was the vital basis of the district administration; and it comprised a number of hereditary officials. In the more democratically constituted villages, the proprietary members were all deemed to be equal and looked upon themselves as masters of the village, of all the lands attached to it and of the other inhabitants thereof, the common affairs being managed, not by a headman holding his office from government or other external authority, but by a committee of the proprietors of the village. The officials of government did not usually interfere directly in the business of administration and treated with the community "as with a body corporate." The village had a machinery of its own for distributing the burdens, both of taxation and of service.

In the larger villages of this type, there were usually several divisions of the community, each of which had some share in the *panchayat* or governing board, consisting, on an average, of perhaps half a dozen members. The members of the board had power and authority only as representatives of the general body. They wielded great personal influence; and disputes were, frequently, voluntarily referred to them. But they did not attempt to punish other proprietors; nor did they presume to offer decisions in disputes not voluntarily referred to them.

Cultivation in these villages was not, however, carried on in common. Every village was divided into a certain number of fixed portions, termed ploughs; but a plough was "rather like an algebraical symbol to express a fixed share, than a literal plough". The arable land was divided into a number of ploughs; the individual holdings were expressed in terms of ploughs; and all imposts, whether of government, or required for meeting common expenses, were assessed at so much a plough. It was the practice for lands to be redistributed annually or terminally; but, in course of time, the holdings generally came to be fixed. Common right notions survived to an extent that enabled members to claim periodical remeasurements and readjustments of holdings and payments and to rectify inequalities and boundary shiftings which might have gradually arisen. The grazing ground of each village was common to

all; but the boundaries between the pastures of adjacent villages were jealously maintained; and quarrels about them frequently resulted in bloody affrays. When new lands were brought under cultivation, they were either shared by all, the number of ploughs remaining the same; or certain members were permitted, by common consent, to create fresh shares. Grazing ground was, however, not ordinarily permitted to be broken up for cultivation.

In some of the larger villages, there were generally three or four big divisions called *pattis*,¹ each of which had some proportionate claim in the composition of the representative *panchayat*. Membership of the *panchayat* was usually claimed on the basis of a large stake in the village, as well as of personal fitness. The *panchayat* never presumed to act in any other than its representative capacity and consulted its constituents in many matters before it came to a decision. Its power varied, and was, in no case, defined with mechanical exactitude. The village money-lenders, traders and retail-sellers were looked upon more as allies than as servants, though they were not allowed any direct voice in the management. But the hereditary village servants, like carpenters, and smiths, were definitely treated as subordinates. "These strong village-communities permitted no encroachments; and there was generally no middleman between them and government. They paid their revenue, generally, direct to the government agent; and the latter confined himself generally to the power delegated to him and did not interfere with the community."

II

The significance of the term *miras*² was most important in this connection; it was intensive in its working in the Jaghir District of Chingleput³ and in the District of Tanjore, the greater portion of which was brought under the Company in 1799. It comprehended "a variety of rights differing in nature and degree, but all more or less connected with proprietary possession, or usufruct, of the soil and its produce". Of course, the difference between *mirasi* right in land and the *mirasi* of the village officials was well recognised. "The right to hereditary possession, the *maniyams*, lands free of tax, fees at various rates received in kind from the general produce, and other privileges of the *Kāniyat-chikār*, *Kāvalkar*, *Karnam*, *Talaiyāri*, *Vetti*, carpenter, iron-smith, washerman, etc. is called *mirass*."

The right of the permanent cultivator to the hereditary usufruct of land was also called *miras*; and so was the right to the Government's share of the produce of the land, held by special grant under various

¹ A portion of a village, or a cluster of houses.

² From an Arabic term (=to inherit), meaning inherited property or right: see Wilson's "Glossary of Judicial and Revenue Terms", pp. 342-3; and Ellis's *Treatise on Mirasi Tenure*, which says that the term is applied to certain hereditary privileges, like exemption from assessment, money compensation from other members of the community and the fees and perquisites of the officers and servants of the village.

³ The Poonamalle region was acquired by the Company in 1750; and the bulk of the District was granted by Nawab Walajah in 1763; while Sadras was taken from the Dutch in 1781.

titles such as *sarvamānyam*, *ardhamānyam*, *srōtriyam*, *kandikaminam*, and *mokassa*; as well as any office or privilege or emolument descending hereditarily. The word *miras* was, however, used most frequently to signify land held by absolute proprietorship, under one of three contingencies; *viz.*, (1) either as a joint co-parcenary tenure in the lands of a village and either cultivated in common or allotted annually, or at some other stated period, among the proprietors; (2) as one of several parcels or lots into which the lands of the village were divided; or (3) as a whole estate where all the lands of the village were the property of one proprietor.

In the districts of Chingleput and North and South Arcots, landed *miras* was marked by a distinction nowhere else known, as the proprietary *mirasdars* held a certain extent of land free of all assessment and were entitled to receive fees under various headings, from the gross produce of all taxable lands in their villages and a portion of the produce from all lands cultivated by persons other than *mirasdars*. Such a right was of two kinds; *viz.*, (1) where the entire lands of the village were held jointly and either cultivated in common, or divided yearly or periodically; or (2) where the lands were held in severalty and subject, as a consequence, to no periodical redistribution. In the district of Tanjore, the *miras* was applied and operated in a different manner. According to a memorandum prepared by Colonel William Blackburne, the Resident at Tanjore, and submitted, in 1804, to Lord William Bentinck, the Governor of Madras, the *miras* right in Tanjore possessed "all the essential qualities of property." It was held sacred by every successive government and was "in its origin probably derived from the grant of the sovereign."¹ A distinctive feature was the division of the village into equal shares, each made up so as to yield an equal amount of produce and giving a proportionate share of all the benefits of common property, such as the use of the village waste, mines, quarries, fisheries, forest and pasturage; while all sales, mortgages and gifts of the *mirasi* shares were recognised and enforced by courts of law, including sales of waste land to the extent of the share of the alienor.

Thus, the typical Tanjore village was essentially democratic in its constitution, and did not know any *patel* or headman, as in the Maratha country, nor any one corresponding to the Peddakapu of the Northern Sarkars and the Reddi of the Ceded Districts. Thus, it was only after the establishment of the British administration that the office of headman appointed by Government was created. It was only under the Madras Regulations of 1816, that the post of Village Munsiff was created in the district and armed with police and judicial powers. But the attempt to foist on the village a headman from above did not succeed at first. The Collectors experienced, for a time, the greatest difficulty in inducing one of the *mirasdars* of the village to undertake the task. It was only in 1836 that the village headman was also made the agent for the collection of the public revenue and given the title of *Patta Maniagar*, a name imported (according to Mr. Venkasami Rao), apparently, from Coimbatore. The headman has since deteriorated in

¹ pp. 397-400 of *The Tanjore Manual* by Venkasami Rao.

prestige and name; and the object with which his office was created, *viz.* that of commanding the respect of his brother-*mirasdars*, has not been realised.

The office of *Karnam* was purely that of a private accountant, employed to keep the accounts of the *mirasdars* of each village or group. It was, of course, a part of the old village community's machinery. Traces of such an office survived for long after the introduction of British rule, under the designation of *Kudi Karnam* (the accountant of the villagers), as distinguished from the *Sarkar Karnam*. These double office-holders were necessary in those villages where the number of holdings was large and the villagers were comparatively ignorant and consequently required assistance. In 1799 when the Kingdom was annexed, the English Commissioners were struck by the absence of all rural agency whatever, to look after the interests of Government. The *Karnam*, as a servant of Government, began to function only from 1807. At first, his remuneration included a small grain-fee which had been allowed to the *Kudi Karnam*. In 1852, his salary became a direct charge on the revenues of Government; and the so-called *Karnam's Fund* was absorbed, along with similar funds, into the state exchequer. According to the Police Regulation XI of 1816, the *Talayari* who was hitherto a private servant of the community, was declared to be a part of the regular police establishment, though, for long, he did not do any regular police duties. In 1860 when the Presidency *Mofussil* Police was reorganised, all the claims of the State to the services of the *Talayari*, were formally abandoned. His traditional emoluments were, like those of other village servants, derived from percentages on the gross produce of the land, called *swatantrams*.¹ A moiety of the *Talayari's swatantram* was resumed and absorbed in the government village establishment charges.

In such *mirasi* villages, the contributions of the community for *kaval* (or police) duties were not regulated on any fixed scale, but varied from area to area. Sometimes they were in the form of an assignment of the entire produce of particular fields. In other cases, they were a percentage of the entire produce of the village. Except in the case of the perquisites of the *Karnam* and the dues of the temple and the Brahmans, Government did not control the actual disbursements, but left them to be managed entirely by the *mirasdars*. The employment and dismissal of the village servants had always rested with the *mirasdars* themselves. Some of them, like the physician and the *pattigar*, have ceased to exist, and most of the others have become servants of the *mirasdars* themselves.

In the Chingleput District which, when its revenue management was directly assumed by the Company, was placed under the charge of the Committee of Assigned Revenue and, later, under a Superintendent and a Collector, the *mirasdars* were found to be in enjoyment of certain *rasooms* (fees or customary payments) on *marahs* from the produce of

¹ Hereditary right to privileges, perquisites or fees. Any fee or privilege claimable by village servants, musicians or the like is known more particularly as *swatantradittam*.

other lands cultivated by the *pyacārries*¹ (lit. *payir-kārans* or temporary cultivators, for a stipulated term and a given share of the crop). Some of these *pyacārries* had a life estate in the *mirasi* lands which they cultivated. At first, the Board of Revenue considered the right of the *mirasdars* to be a proprietary right; but Government disputed this assumption and defined that *mirasi* was only "a preference of cultivation derived from hereditary residence, but subject to the right of Government as superior lord of the soil, in what way it chooses for the cultivation of its own lands." Mr. Lionel Place, the famous Principal Collector of Chingleput, whose vigorous administration of the district from 1793 to 1798, busied itself with an investigation of the land-revenue, the rights and privileges of the ryots and the discovery of abuses in connection with the revenue collection and management, declared in his final report, dated 6th June, 1799,² that the *mirasdar* had an undoubted hereditary property in the soil and that "he derived this right originally from the sovereign to whom he acknowledged obedience and the rendering of a stated portion of the produce as the tenure by which he held it; that he sold, mortgaged, gave away and left his lands to posterity, which the *pyacarry* could not; that until the term *meerassie* was employed by the Muhammadans to denote the lands of a *meerassdar*, they were described by a compound word in the Malabar (Tamil) language, *cāniātchy*, *cāny* signifying land and *ātchy* heritage." Thus his settlement was on the basis of village rents and of the produce, the parties who entered into the engagements being the principal holders of the land in the village jointly.

III

In the Northern Sarkars, Nawab Anwaru'd-din Khan who was the *Nazim* of Chicacole under the great Nizamu'l-Mulk, ascertained and realised the full revenue of the districts under his rule. The well-known Rustam Khan who was in charge of Rajahmundry and the southern *Sarkars* in the years 1732-39, put down the frauds and oppressions of the *zamindars*, appointed *amins* and supervisors in their place and compiled a *jumma kaumil* (total original assessment). Under the rule of the French which was very short-lived, the *zamindars* were deprived of their official duties, and, like the French nobles of the *ancien regime*, allowed to enjoy, under *sanads*, their *rassooms* and *saverams* or conditional hereditary privileges amounting to about 10 per cent of the net revenue collected. They, however, completed a fresh survey of *hustabood* (or survey of the detailed account of the gross collections of the whole country). The *jumma bandi* or annual settlement was doubled in the Rajahmundry and Chicacole *sarkars* and approximated to the *kham vasul* (gross, as distinguished from the net revenue). This survey might have been made the basis of a more adequate *jumma kaumil* which would have served as the basis of a progressive income.

¹ *Payakari*, corruptly, *Paycarry*, was wrongly derived in early glosses from the Pers: *Pai* = a foot; and *kar* = to labour, or to sow.

² Vide Appendix No. 16 to the *Fifth Report*, Vol. II (1866 ed.)—Extracts from the Report of Mr. Place respecting the Land-Tenures in the *Jaghir*, dated 6th June, 1799.

The English conquest of the *Sarkars* took place in 1758-59. The Nizam's formal confirmation of their possession came in 1766; and it was only three years later, that the Company's servants were appointed to directly manage it. The *zamindars* kept retainers of three kinds, viz: *peons* paid in money; *mocassa peons* paid by grants of land, subject to a low quit-rent, and the *manovarti peons*, being tenants of a higher order, bound to bring their adherents into the field when required. Government attributed to the *zamindars* the character of tributary chiefs at first, but soon found out the mistake and the fallacy of such an assumption. The village communities, whether in the *zamindari* or *havelli* lands, retained their old organisation of the *Patel*, the *Karnam* who kept registers and accounts of cultivation, the boundary-man, the watchers of tanks and channels, the *Talayari* and the *Toti*, all of whom enjoyed rent-free lands known as *maniyams*. Of course, both *zamindars* and the renters of revenue in the *havelli* lands, usurped rights, including *rasooms* and perquisites from the cultivators; while the *zamindars* had usurped judicial and other powers formerly enjoyed by the *sarkar* officials like the *amaldars* and the *fuujdars*.

IV

The evils of the *poligar* system of rule were very pronounced in the Ceded Districts, acquired in 1800 by treaty with the Nizam and placed under Major (afterwards Sir Thomas) Munro, their first and greatest Principal Collector. The headmen of villages were petty tyrants in themselves; and the chief cultivators, abetted by accountants, had become bandits in many cases.¹ At first, the Directors recommended the adoption of gentle measures towards the *poligars* so that they might be reconciled to British rule and characterised Munro's stern attitude towards them as disingenuous. And Munro had to demonstrate that they were not entitled to gentle measures on ground either of their ancient rights or of their recent conduct, and gave an account of their claims and rights, as he understood them. His first settlement of the land was made on the *mozawar* basis, each village to pay a lump assessment, the headmen being severally responsible for the assessment of their individual villages and jointly for the whole of the district. The second settlement was on the *kulwar* or *ryotwar* basis and was finished by 1805. Munro boldly condemned Government's proposal to revert to a *zamindari* settlement, the *zamindars* or proprietors to pay a fixed sum for each village for a term of years, and reiterated his arguments for a *ryotwar* arrangement with modifications to be introduced if required.² The practice of the cultivators was to change holdings annually or periodically and to occupy fallow or waste land and thus allow the previously cultivated land to have rest.

¹ Vide the letter of Wm. Thackeray, Collector of the Adoni Division, dated September 8, 1807 which describes the *poligars* as always fighting with the troops of the *sarkar*, while the *patels* and *karnams* had become bandits.

² The Reports of Munro dated November 30, 1806, of July 29, 1807, and August 15, 1807—vide *The Fifth Report* Vol. II. pp. 413-34 and Arbutnot's *Sir Thomas Munro*, Vol. I. App. 6.

In Malabar the early British administrators asserted repeatedly that the village system did not exist; the existing *Nāduvālis* and *Dēsuvālis* being commandants of the *nād* or country and the *dēsam* or parish—each division having to contribute its allotted quota of Nayers which it was required to bring into the field. The chieftains held their dignities as hereditary in their respective families. In 1817, Sir Thomas Munro, then Commissioner for the framing of Judicial and Police Regulations, paid a visit to Malabar to satisfy himself as to the real character of these communities. He came to the conclusion that Malabar had been, from the earliest times, divided into districts and villages, the limits of which had remained unchanged; that these were under hereditary chiefs and that the village was called the *dēsam* by which title it is still commonly known. The *tara*¹ formed a small republic as it were, represented by their *kārnāvar* or elders and presented a degree of resemblance to the village community of the Tamil districts. The *dēsam* and the *tara* were not coterminous. The *nād* or country was a congeries of *taras* or village republics. And the *kūttam* or assembly of the *nād* was a representative body possessing considerable powers which could set at naught, when occasion arose, even the authority of the Raja and his ministers.²

The *tara* organisation was attempted to be modified into the *hobali* (*Kan: hobali = division*) system, or subordinate direct establishments, under the Company's rule, the *taras* being enlarged for this purpose. It, however, only added one more link to the chain of officials between the Collector and the village officials. It was abolished later on and replaced by the existing *amsam* system. The Special Commissioner who created the new arrangement in 1822-23, was at great trouble to choose for the headship of the *amsams*, the most influential of the *dēsuvālis* under the ancient system. The *dēsuvālis* selected were not generally the most important of the chiefs of all the *dēsams* comprised in the *amsams*; and hence, the rights of the other *dēsuvālis* had to be carefully preserved. The new scheme ignored and failed to utilise the civil organisation of the *karnāvars* of the *taras*; and hence there was effected one more breach with the past. Each *amsam* came to be equipped with an *adhikari* or headman, an accountant or writer, called *menōn* and two or more *kūlkārs* (club-men or peons) who thus became the local representatives of Government.³

VI

In the southern districts which were under the rule of the Nayaks, of Madura, a considerable portion of the country had passed into the hands of the *poligars*; and the *palayam* organisation, though the most

¹ Munro thought that the name *tara* was applied by the officials of Hyder Ali and Tipu Sultan to the territorial units which they tried to keep alive as villages with hereditary heads.

² *Vide* the Tellicherry Factory Diary quoted by Logan in his *Malabar Manual*; p. 90.

³ See p. 35 of J. Matthai's *Village Government in British India*.

practical solution of the difficulties in the days of the Nayaks,¹ and extended even into the Mysore and the Carnatic regions, had come to be unworkable and to result in the most severe oppression of the people. The Report of Mr. Lushington, the Collector of the Poligar Peshkash in the Southern Districts, dated 20th August, 1799, describes the various fees and money-collections made by them, the claims of the *poligars* over lands in the *sarkar* villages which they presumed to hold rent-free and their frequent ejection of ryots from lands of which they themselves held the *inam* rights.

The Company, when it got control of the Carnatic, by treaty with the Nawab in 1792, regarded the *poligars* as usurpers of authority. A Report of the Madras Board of Revenue on this subject, made in 1797, was later supplemented by a Minute of Lord Hobart, the Governor. The Court of Directors agreed with the views and suggestions of their Governor, in their Despatch of 5th June, 1799. The Collectors of the Southern and Western Poligar Countries reported fully on their military establishments and the mode of their maintenance, as well as on their revenue and other resources and the nature and variety of their impositions on the people. The expedition of Major Bannerman against the Tinnevely *Poligars* and the subsequent campaign which was ended in 1801, were followed by the proclamation issued by Lord Clive, the Governor, dated 1st December, 1801, which suppressed the use of all weapons of defence, and promised the *poligars* a general amnesty and a permanent assessment on the principles of the *zamindari* tenure. Dr. Caldwell, writing in 1881, congratulated the Government on the fact of the *poligar* having been changed into a *zamindar*, in "nature as well as in name"² and also on the peacefulness that has settled upon the descendants of the fierce retainers of the *poligars*. The double fees exacted by the Poligars, as district-watchers and village-watchers, for *dēsha kaval* and *stalam kaval* respectively, interwove them and their retainers into the establishments of the villages. The *poligars* had so encroached upon and assumed the rights of the village *talayaris* and watch-men, that more than 90 per cent of the villages in the Tinnevely District had come under their influence and their *peons* had superseded the *talayaris* or retained them on condition of receiving from them a share of their perquisites. Thus, the older institution of the village *kaval* came to be absorbed in most cases into the *poligar* system. The comparatively newer institution of the *desa kaval* (district watching fees) originated either from a grant of the ruler or from the voluntary action of the villagers, who, being unable to protect themselves, submitted to such contributions. These came to be levied by the *poligars* from defenceless villages as the price of forbearing to plunder them.

¹ The system was the solution of Visvanatha Nayak and his Dalavai, Aryanatha, for the difficult problem of reconciling the conflicting interests of all the classes of the people; its object being to enrich and ennoble the most powerful of each class and at the same time to secure their and their descendants' allegiance. The existence of the Poligars, as a class, dates from the commencement of the Nayak rule at Madura. (*cir.* 1550), though some, like the Setupathi of Ramnad, went back to earlier times.

² *A Political and General History of the District of Tinnevely* (p. 219).

They consisted of payments of money, grain, plough or cattle and various other articles. The fees made on account of police duties were exclusive of other assessments to which the inhabitants of the neighbouring *sarkar* villages were subject as well, under various pretexts, such as hunting, *batta*, marriage expenses and other presents.¹

The effect of the introduction of British administration on village organisation in South India has been to introduce the practice of paying village servants in cash and to convert them, so far as the surviving portion was concerned, into the servants of the Government organisation and thus sever them from their connection, either with the village community or with the *zamindar* or *poligar*. The hereditary principle was accepted, in a large measure, in the selection of the chief officials of the village. The *panchayats* came to be largely dropped out of use, though Munro tried to revive them by the Madras Regulations of 1816. A large amount of matter was taken over from local initiative and direction and vested in the bureaucratic machinery. From this state of affairs, there has begun, recently, a healthy revulsion by which Government has been largely promoting schemes of decentralisation in village and local matters.

¹ For details, *vide* The Fifth Report (Ed. of 1866) Vol. II (Madras Presidency pp. 89-90).

The Chidambaram Temple

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I

The numerous temples all over South India are a constant attraction to the study of local history. The materials for writing the history of the South Indian temples are to be found in (1) Current traditions and legends some of which are interlarded with miracles in the local *puranas*, (2) Inscriptions and (3) Tamil Literature. The Chidambaram Temple is rich in epigraphs. The inscriptions of the Temple which have been engraved on its walls relate to several South Indian Rulers—Pallava, Chola, Pandya and Vijayanagar Kings. Unfortunately, no early epigraphs are found. As the earlier structures of the temple seem to have undergone renovation, the records so far deciphered do not take us much earlier. Though the antiquity of the temple is attested by archæological evidence as well as by references in early Tamil literature, no contemporary epigraphic material is found in the Temple. Again as the full texts of all the inscriptions have not been published, we have to rely on the summaries of the inscriptions given in the Annual Epigraphical Reports. The earliest Chola records in the Chidambaram Temple are those of Rajendra Chola I, dated 24th year of his reign, and several records of Kulottuṅga I, the earliest being the 9th, and the latest the 47th year of his reign. There are several inscriptions of Vikrama-Chola, and of the later Cholas, notably Kulottuṅga III.

The inscriptions of the early Pandyas are not found in the Temple, but there are several inscriptions of the Mediæval Pandyas—Sundara Pandya I, Vira Pandya, and Vikrama Pandya. Though the history of the Temple goes back to the Pallava times, no inscriptions relating to early Pallavas are found in the Temple. But there are several inscriptions of the great Mediæval chieftain, Kopperunjingadeva, in the Nataraja and the 'Tillai Amman' Temples in Chidambaram. The inscriptions of the Hindu dynasty of Vijayanagar are found all over South Arcot, and there are epigraphs in the temple relating to the Vijayanagar rulers of the earlier and later dynasties.

Some of the epigraphs of the Temple bear an historical introduction and they are so far valuable in corroborating the historical achievements of the rulers derived from other sources. Most of the inscriptions which refer to later Chola Kings simply register grants of land for flower gardens; in some of them gifts of land are made for maintaining worship, offerings, festivals in the temple, and particularly the special food offering known as '*Pavāḍai*'. The Chidambaram Temple does not seem to possess many old copper-plate grants. Sewell refers to some copper-plate

grants.' Hultzsch, in one of his early Epigraphical Reports, says that he saw 2 copper-plate grants which were dated in Saka 1621 and 1725, but they do not seem to be of much importance.

Few temples in South India have such a rich literary tradition as the Chidambaram Temple. The 'stala puranas' of which there are many varieties are of no use for historical purposes, but they are interesting in enabling us to understand something of the religious symbolism of the temple. The 'Koil Puranam' written by Umapathi Sivachariyar of Koravangudi a medieval schoolman of the early 18th century, begins with 'Vyaghrapada Sargam' and ends with 'Tiruvizha Sargam'. The *Chidambaram Puranam* of Paranjoti Munivar who lived about A. D. 1518, belongs to much later date. The earliest references to Sirkambalam are found in the hymns of the three poet-saints—Appar, Sambandar and Sundaramurthi. *Dēvāram* or the sacred hymns deserve critical study as genuine works of considerable importance to the students of South Indian history. The evidence furnished by the poet-saints may be taken as true as their writings have come down to us without much change in their reading. The religious fervour and ecstasy with which these poets have sung the glories of the temple point to the fact that the temple has been regarded as a sacred institution even long before what is called the hymnal period in Tamil Literature. (A. D. 600–A.D. 950). Another important work in Tamil Literature which deals with the Temple is Mannikavaṣagar's *Tiruvaṣaḡam*. According to tradition, *Tiruvaṣaḡam* was recited in the temple itself. There are 25 poems dealing exclusively with Tillai. *Tiruchiṣṛāmbala Kovai* was also composed in Chidambaram by Mannikavaṣagar.

To the student of South Indian history, Sekkilar's *Periyapurānam* is of considerable interest and importance. The contents of this work, though not the final redaction of it, date from the time before the great Chola King, Rājārāja. The *Periyapurānam* which is the history of the 63 Saiva Saints mentions the most ancient Saiva temples and it is therefore helpful in determining the antiquity of these temples. This quaint but valuable work was composed during the reign of the Chola King Anapāya or Kulōttuṅga-Chōladeva but the subject matter of the book is more ancient than the time of the great Rājārāja whose inscriptions record that he set up images of a number of those 63 saints in the Tanjore temple which was founded by him. As regards Sekkilar's *Periyapurānam* we can in general depend on its testimony, as the author spared no pains in collecting all the available information of his time, but there is also in it a good deal that is mythological.

The literary references that we find in Tamil Literature help us to some extent in interpreting the purpose of Siva's dance. Of such literature, we may mention *Unmai Vilakkam*, Tirumular's *Tirūmuntram*, *Chidambaram Mummaṇi Kovai*.

II

The ancient name of Chidambaram is Tillai. It is known by this name both in early literature and in epigraphs. It was at first a forest of Tillai (*Excoecaria Agallocha*) trees. The other names by which Chidam-

¹ Sewell lists of Antiquities, Vol. 2, p. 9.

baram is referred to both in Tamil Literature and in epigraphs are Puliur, Perumbarrapuliur, and Sirrambalam. Sirrambalam has been interpreted by the Government Epigraphist as 'the small temple as distinguished from *Përambalam*'. On the other hand Sirrambalam is to be taken to mean as the place of 'chit' i.e. divine knowledge.¹ The name Vyāghrapura, which is a Sanskrit rendering of the Tamil name Puliur, occurs in an inscription (No. 515 of 1922) of Rajendra Chola III at Tirukannapuram which refers to the king as a worshipper at the divine lotus-feet of Kanakasabhāpati at Vyāghrapura. The temple was so famous in ancient times that the *Dēvāram* hymnists simply refer to it as 'Koyil' (i.e. the Temple), and in some of the inscriptions, it is simply referred to as Tirukkōyil. Chidambaram, according to available inscriptions, seems to have had at first as many as 14 hamlets.

III

According to tradition, the temple was of divine origin, but was repaired and enlarged by Hiranyavarma in the 6th century. Apart from this tradition, it is with the help of epigraphic and monumental evidence that we have to sketch the growth and expansion of the Temple from the time of its foundation. The Siva Temple at Chidambaram is an ancient structure and contains many inscriptions attributable to Pallava, Chola and Pandya kings. It is not a temple built almost in its entirety like the temple at Tanjore. The main shrine is a small building which has attained to great sanctity; and court-yards, gopuras and other exterior structures have been added to it by succeeding kings in such a manner that the original small central shrine cannot be seen from outside. Special sanctity attaches to the 5 *sabhas* or halls—the Chit Sabha, the Kanaka Sabha, the Nritta Sabha, the Deva Sabha and the Raja Sabha.

The most ancient parts of the temple seem to be the small shrine of Nataraja and the Mūlasthana right opposite to the main east gopura of the temple.² The shrine of Nataraja is built of wood which is clear proof of its great antiquity. The Kanaka Sabha or the golden hall includes the shrine of Nataraja and the secret chamber called '*Rahasya*' where there is no image or linga but a string of 'vilva' leaves and the explanation is that it is the abode of Sīva in his *akasa* or ethereal form. The Chit Sabha and Kanaka Sabha are enclosed by a wall which separates it from the Mūlasthana and this wall which bears on it some of the earliest records of Vikrama-Chola, dated 3rd year of his reign

¹ "செம்பரம் மம்பரத்திருச் சிற்றம்பலம்" (Koilpuranam).

"'*Chit*' means the subtle essence of the deity, filling all space. Being connected with the concrete term '*ambaram*', the meaning of the term may be the essence of the spiritual symbol, 'spiritual soul'. *Ecumbara* is a name of Siva, but Chitambara ignores visible form and this term was given to the first Saiva fane in South India having a sanctuary open to the heavens and without any idol" (Taylor Mss. Vol. I, p. 659).

² The following stanza in Koilpuranam by Umapathi Sivacharya refers to the fact that the Chit Sabha is to the south of the Mūlasthana shrine of the temple.

"சாடரு வெயிலை வலம்பைத் திவிலை சைப்போங்க்
கடெய் கதலின் மூலக் குதியுந் ததற்குத் தென்னர்
காடுறு மறைக்கக் காணு மன்றுமப்பல மொன்றுகூடல்
காடுறு மென்று மென்று சென்னை மரஞ்சுடையவைகள்"

known in 3 inscriptions as Vikrama-Śolan-Tirumaligai and Kulottunga-Śolan-Tirumaligai in 4 others. The first Prākārā of the Temple thus surrounding the central Shrine of Nataraja might have been the work of Vikrama-Chola, the son and successor of Kulottunga I. The second prākārā wall which encloses the Mūlasthāna-Shrine is also called Vikrama-Śolan-Tirumaligai. From one of the inscriptions¹ it is inferred that the Mūlasthāna-Shrine is known as 'Edirambalam'.

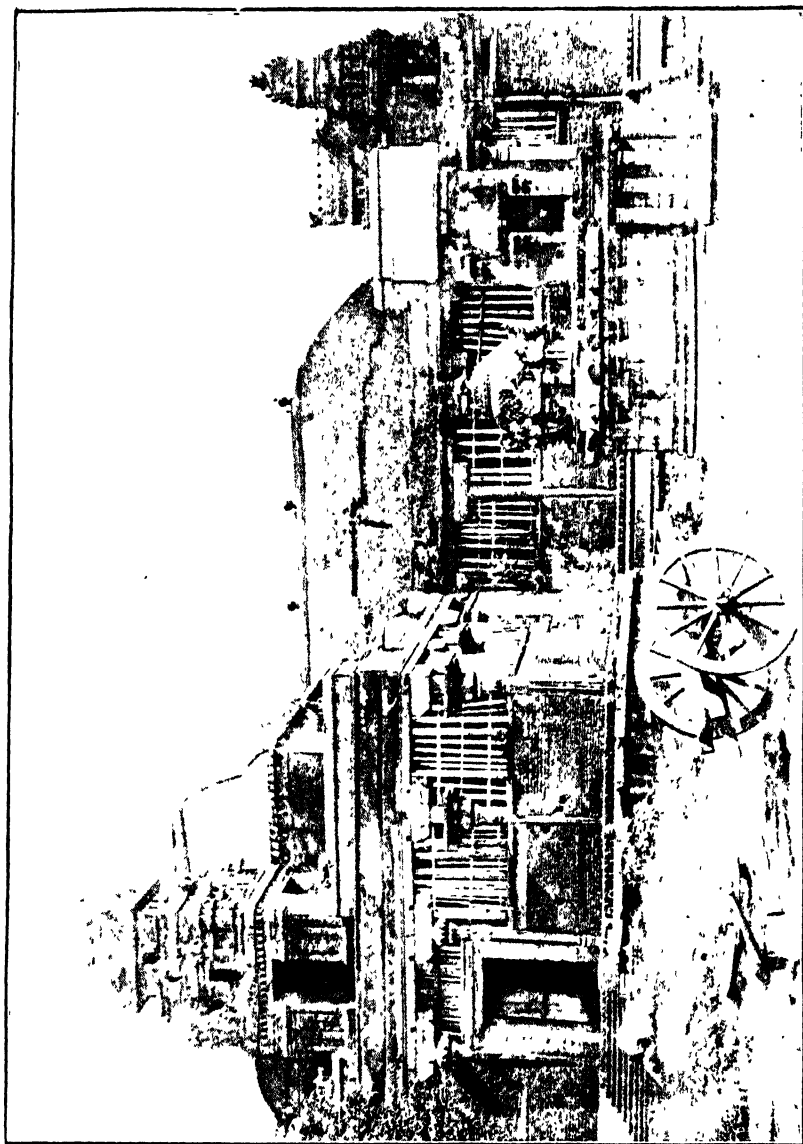
All gifts of and made to the temple have been engraved on the temple walls. Up to the time of Vikrama-Chola all transactions made on behalf of the Temple were made in the name of Chaṇḍesvara, but subsequently they were registered in the name of the temple priests and trustees, either jointly or severally. This may be taken to refer to the time when the Mūlasthāna-Shrine and the image of Chaṇḍesvara by its side was considered to be the *sanctum sanctorum* of the temple. That provision was made for the singing of *Devaram* in the Mūlasthāna-Shrine is attested by one of the epigraphs of the temple (No. 341 of 1913). The prominence given to the Nataraja-Shrine in later inscriptions accounts also for the disappearance of Chaṇḍesvara and the substitution, in his place, of one of the temple committee. This change suggests the reason why, at the present day, the Dikshitaras of Chidambaram have come to be the practical owners of the temple. In the days of Kulottunga III, the order of the king or of his officers which was written by his royal secretary (Tirumandira Olai) was generally addressed to the executive members of the temple assembly, the temple priests, the managing committees and the supervisors of the temple. A large number of Kulottunga III's officers are mentioned in the inscriptions.

The original title-deeds of lands granted to the temple and other connected documents such as the resolution of the village assembly to make the land rent-free, on receiving some fixed amount from the donor (290 of 1913) or to distribute the due tax on other assessed lands of the village (280 of 1913) had to be deposited in safe custody in a room or office of the temple called '*Tirukkai-ōtti-pandaram*' together with sale-deeds if any. The little shrine in the inner enclosure i.e., the Nritta Sabha, is also one of the oldest structures of the temple; and from an architectural point of view, it is the most beautiful structure in the whole temple. In the words of Fergusson, it is 'a porch of 56 pillars about 8 feet high, most delicately carved resting on a stylobate, ornamented with dancing figures more graceful and more elegantly executed than any of their class in South India. At the sides are wheels and horses, the whole being intended to represent a car'.

According to Fergusson (*Indian and Eastern Architecture*, p. 350) the inner enclosure, as we find it to-day, may be old as the 10th century and the Temple of Parvati, and other shrines in the outer enclosures belong to a later age. The great gopuras of the Temple seem to have been built by different kings at different periods. That the northern gopura was built by Krishnadeva-Raya is evident from his own inscriptions in the temple.² Another epigraph of Krishnadeva-Raya (374 of

¹ No. 290 of 1913.

² No. 371 of 1913.



The '1000-Pillared Mantapam'

1913) says that while the other *gōpurās* of the temple were the work of crowned kings, the northern *gopura* was the work of God Himself, a poetic way of saying that the northern tower was the most beautiful. The eastern *gopura* seems to have been built by the Pallava chief, Kopperunjinadeva, and rebuilt by the great educational benefactor, Conjeevaram Pachaiyappa Mudaliar (1754-1794).¹

That the southern *gopura* must have been the work of a Pandya king may be inferred from the Pandya crest—the fish—on the cross stone connecting the right and left niches of the tower. The 1000-pillared *maṇḍapam*, it is inferred, was built sometime between 1595 and 1685 A.D. (*Madras Journal* Vol. VIII, No. XX, p. 15-1838).

The earliest literary references to the Karpagavinayakar Temple adjoining the western 'gopuram' are found in the Koilpuranam.²

The temple at Chidambaram contains a number of Sanskrit and Tamil inscriptions. These inscriptions mention the names of some of the Pallava, Pandya, Chola and Vijayanagara Kings and also record some of the achievements of these rulers. They are therefore useful either in throwing fresh light or in corroborating the conclusions derived from other sources. Though the names of some of the kings are repeatedly mentioned in several inscriptions, there are 3 inscriptions which give us the names of 3 Chōla Princesses—Kundavai, Ammangai, and Madurantaki. The first of these princesses is called "Rajarajan Kundavai, the younger sister of Kulottuṅga-Sora-deva (or Rajendra Sora-deva)" and has been identified with Kundava³, the daughter of the eastern Chalukya Rajaraja I (1022-1063) and the younger sister of Kulottuṅga Chola-deva I; the second princess is referred to as, "Amrāngai, the daughter of Kulottuṅga-Sora-deva"⁴ and is identified with Ammangadevi who married the eastern Chalukya King Rajaraja I.; the third Princess is referred to as "Madurantaki, the younger sister of our lord (Kulottuṅga-Sora-deva)".⁵

¹ Hamilton in his *History of Hindustan* observes that the eastern *gopura* was repaired by a devout widow, the mother-in-law of Pachaiyappa Mudaliar of Kanchipuram at the expense of 50,000 Pagodas.

The stone-images of both Pachaiyappa and the lady are in the niches of the southern wall of the gateway. Refer to the "Select Papers, Speeches and Poems connected with Pachaiyappa Mudaliar" edited by V. Krishnamachariar (1892), wherein Mahavidvan Sabapathi Mudaliar has sung of the rebuilding of the Gopura by Pachaiyappa in the last years of his life.

"தரபதர் போற்றுத் தில்லைததற்பரஞர் தங்கோயிற்
கோபுரம் சீர்த்திசையிற் கோலமுடன்—கோபெறயே
எட்டுவித்தாரனெக்கக் காஞ்சிநகர்ப் பச்சையப்பசு,....."

² The following stanzas are found in the Koilpuranam of Umapathi Sivacharya and we may therefore take these references to confirm the existence of the Karpagavinayakar Temple and the western 'gopuram' long before the 13th century.

"தாயவ
தற்பகை தெருமு அரமுணி கோபுரர்
தற்பகைதனி யானை கழல்களே"

"மன்னோக்க எடமாடு மன்னோக்கு மறிற்குடபாற்
பொன்னோக்கன் முன்னோக்கும் பொற்பமர் கற்பகப்போற்றி"

... (Koilpuranam)

³ Ep. Ind. Vol. IV, p. 302, Ind. Ant. Vol. XIV p. 50.

⁴ S. I. Inscriptions Vol. IV, No. 226.

⁵ No. 117 of 1888.

One of the famous Chola Kings was Parantaka I., who ruled with various titles from A.D. 907-947, '48 A.D. According to the Leyden Grant¹ Parantaka covered the Śiva temple at Chidambaram with gold; and the credit for this work is also claimed for Kundavai.² Parantaka I's covering with gold the small hall (*Dabhrasabhā*, which is a translation of the Tamil *Śrīrāmbalam*) of Śiva at Chidambaram is referred to in verse 53 of the Tiruvalangadu Plates.³ Though tolerant of all religions in his dominions, he is known to have followed the Saiva creed, as he utilised all the booty he acquired in his wars in covering with gold the temple at Chidambaram. But there are no inscriptions of Parantaka I in the temple itself to commemorate these achievements which are claimed for him.

Some of the inscriptions of the temple are of considerable interest, as they give us something more than mere names. One of the famous kings of the Chōla dynasty was the Chalukya-Chola Kulottuṅga I who ascended the throne about A.D. 1070. He is known to us from the Chellur Plates of his grandson, Kulottuṅga II, (according to which he reigned for 49 years⁴ and from the Chellur plates of his son Virā-Chōla; we also learn something about Kulottuṅga I from the Tamil poem *Kalingattu-Parani* composed in his honour. But the chief sources for the history of Kulottuṅga I are his own inscriptions. There are the Sanskrit inscriptions at Chidambaram⁵ and a Tamil inscription without historical introduction referring to the 44th year of his reign.⁶ The Sanskrit inscription consists of 2 verses. The 1st verse says that the king burnt the fort of Korgāra (i.e. Kōttāru, near Cape Comorin) and defeated the Kēralas, and according to the 2nd verse, the king erected a pillar of victory on a peak of the Sahyadri Mountains. The references in these inscriptions are in spite of their exaggeration, of some historical value. We know that the parents of Kulottuṅga I were the Eastern Chalukya King Rajaraja I and Ammaṅga-dēvi. He had a younger sister, named Kundavi, after her grandmother which is known from a Chidambaram inscription.⁷ Kulottuṅga I had various surnames. One of his surnames, according to the Chellūr and Pithaparum Plates, is Rajanarayana. In *Kalingattu-Parani*, he is known as Kulottuṅga-Chōla, Karikāla-chōla, Abhaya, Jayadhara.⁸ The last surname Jayadhara is also found in an inscription at Chidambaram.⁹

We know that Kulottuṅga I was succeeded by his son Vikrama-Chōla. The date of his accession has been a subject of dispute. According to Kielhorn, he was crowned king in A.D. 1118, but during the latter part of the reign of Kulottuṅga I, he seems to have been practically

¹ Archæological Survey, S. India, Vol. IV, p. 208.

² Ep. Ind., Vol. V, p. 105.

³ Archæological Survey Report 1904-05, p. 134.

⁴ Ind. Antiq. Vol. XIV, pp. 51-55.

⁵ Ep. Ind. Vol. V, pp. 103-104, S. I. Inscriptions, Vol. I, p. 168 H No. 115 of 1888.

⁶ Ep. Ind. Vol. V, p. 105.

⁷ Ep. Ind. Vol. 5, p. 105.

⁸ *Kalingattu-Parani* canto xi-verse 63 and *passim*, published by V. Kanakasabhai in Ind. Antiquary Vol. XIX, p. 329 ff.

⁹ Ep. Ind. Vol. 5, p. 105.

the ruler. The Kulottuṅga-Solan-Ulā, a Tamil poem composed in honour of Kulottuṅga II, says that Kulottuṅga II covered the Nataraja Temple at Chidambaram with gold. The Rājarājan-Ulā another Tamil work composed in honour of Rājaraja II, the son of Kulottuṅga, also attributes the gilding of the temple to Kulottuṅga II.

An inscription from Tiruppālaivaṇam (No. 349 of 1928-29) refers to Tribhuvana Chakravartin Kulottuṅga-Chōla who covered with gold the temple at Perambalam (Chidambaram). Another record from the same place (No. 315) begins with the words, '*Tiruppērambalam-pon-Vēinda-ruliya*' Rajakesarivarman. Both these inscriptions are attributed to Kulottuṅga-Chōla II whose claim to have covered with gold the temple at Chidambaram is known to us through other epigraphic¹ and literary references.

On the other hand, there are two inscriptions of Vikrama-Chōla² which attribute this pious work to him. Whether Vikrama-Chōla or Kulottuṅga II had the better right to claim to himself the gilding of the temple is a question to which no conclusive answer can be given. Perhaps as in the case of the conquest of Kalinga, the work of covering the temple with gold was accomplished by the son during the lifetime of the father.

Thus the work of covering the temple with gold is claimed by various kings Parantaka I, Vikrama-chōla, and Kulottuṅga II. But, as a matter of fact, some of the Devaram hymns which belong to a much earlier date refer to the temple as செம்பொன்னிலில் எழுதி மேய்க்கத் திறம்பலம், பொன்னம்பலம். But what is more important is that the way in which this event is recorded in Tamil literature and epigraphical records serves to establish the succession of the Chōla kings during this period.

Recent researches have brought to light the doings of the remarkable Chōla chieftain, Naralokavira, in the days of Kulottuṅga I and his son Vikrama-Chōla.³ He is described by many names and titles in his inscriptions such as Kalingaraja, Sabhanartaka, Manavatara, Arulakara, Naralokavira, etc. There are about a dozen inscriptions bearing on the life and work of Naralokaviran, and one of his inscriptions is to be found in Chidambaram. While most of his inscriptions make it appear that he was a mighty warrior, the Chidambaram inscription shows that he used his great position and influence in the state in the service of religion. The most notable of his structures in Chidambaram on behalf of his master Vikrama-Chōladeva was the hall with a hundred pillars.

Another Chōla king for whose reign the inscriptions of the Temple are helpful is Kulottuṅga III (A. D. 1178-1216). The latest date of Kulottuṅga III is the 39th year in a manuscript at Chidambaram.⁴ Kulottuṅga III is known by other names.—Virarajendra-Sōla-dēva was one of his names and we learn from inscriptions of the temple that he

¹ Annual Report for Epigraphy (1907).

² 165 of 1894, 82 of 1895.

³ A. R. E. 1922, p. 115.

K. A. N. Sastri—Studies in Chola History and Administration.

⁴ S. I. Inscriptions Vol. III Part I (1899), p. 43.

was called Virarajendra-dēva.¹ The records of the reign of Kulottuṅga III are numerous. Four inscriptions² of the Chidambaram temple relating to Kulottuṅga III have been deciphered. Of these, two relate to the 5th year, and two to the 9th and 11th year respectively. All these inscriptions have a historical introduction, but the historical introduction of the inscriptions of the 5th year does not contain any statement of historical interest. Inscriptions of the 9th and 11th years contain statements of historical interest. The inscription of the 9th year relates 'how Kulottuṅga III assisted Vikrama Paṇḍya against the son of Virā Paṇḍya, defeated the Marava army, drove the Sinhalese army into the sea, took Madurai (Madura) from Virā-Paṇḍya and bestowed it on Vikrama Paṇḍya. The inscription of the 11th year refers 'to the defeat of the son of Virā-Paṇḍya and to the bestowal of Kūdal on Vikrama-Paṇḍya and adds that Virā-Paṇḍya revolted again, but that Kulottuṅga III 'took his crowned head'. Chidambaram is referred to in this inscription as Perumbaṛṇa-puliyūr in Rājādhirājān Vaḷanadhaṇ and the temple as Tiruchchiṅṅram-balam-udaiyār. According to the information in some of the epigraphs about the building operations of Kulottuṅga III,³ we learn that 'he built the *mukha maṇḍapa* of Sabhāpati and *gōpura* of the shrine of the goddess Govindraja and the enclosing verandha (*Prākara-harmya*)'. These references are to the Nataraja Temple at Chidambaram where the king must have built the 'mukhamaṇḍapa', the 'gōpura' of the shrine of the goddess, Sivakami-Amman, and the verandha enclosing the central shrine. Kulottuṅga III is also described as an unequalled devotee (*ēkhabhaktā*) of the God at Chidambaram.

There are no epigraphs in the temple relating to the early Pandyas. All the available epigraphs relate to the mediæval Pandyas. There are a number of epigraphs which record gifts to the temple and refer to the victories over the Hoysala (Śōmēsvara) Ganda-gōpa, the Kakatiya king (Ganapati), and the kings of Cuttack, Malabar and Ceylon.⁴ The value of these historical references lies in the fact that they help us to identify this king as Jatāvarman Sundara Paṇḍya I., who ruled from A.D. 1251-1261. The eastern and western main 'gōpuras' of the temple contain some epigraphs⁵ referring to the achievements of a certain Sundara Paṇḍya who has been identified with Jatāvarman Sundara Paṇḍya I. One of these inscriptions consists of 2 verses, the 1st verse referring to the conquest of the Chōla by the Paṇḍya king and the second verse mentions Kādavarkōṅ (Pallava king) and the Paṇḍya king Sundarattōl. Two other inscriptions (Nos. 340 and 361 of 1913) praise the military prowess of Sundara Māraṇ (i.e. Sundara Paṇḍya who defeated the Teluṅgas at Mudugur. One of these inscriptions (No. 354 of 1913) consists of three Tamil verses describing the glory of Sundara Paṇḍya who conquered the King of Veṇaḍu (i.e. Travancore), the Teluṅgas and the Koṅgu country and killed Gaṇḍa-gōpala. The value of these inscriptions of Sundara Paṇḍya I consists in confirming some

¹ S. I. Inscriptions Vol. III. p. 205.

² 121 of 1888, 122 of 1888, 457 of 1902, 458 of 1902.

³ 190, 191 and 192 of 1908.

⁴ 170, 171, 172, 173, 176 to 186 of 1892.

⁵ 332, 340, and 361 of 1913.

of the achievements claimed for that ruler as a great warrior. Some of the epigraphs of the temple¹ refer to Sundara Paṇḍya I's weighing himself against gold; and, he is also credited with having built a golden hall at Chidambaram (S. I. Inscriptions Texts Vol. IV. Nos. 627 and 630).

Another epigraph referring to Jātavarman Sundara Paṇḍya I² records the agreement by the trustees of the Tiruvanteśvarasvamin and Nayanār Maṇṇanār Temples situated between the Kollidam and Vellāru rivers that certain dues on lands in the village belonging to the Temple at Chidambaram should be remitted and that the amount should be rateably enhanced on the remaining lands in the village. The popularity of this great king, Sundara Paṇḍya I, was commemorated by the inauguration of several religious and civic charities. A record from Chidambaram³ registers the establishment of a grove and an avenue of cocoanut trees planted on either side of it for the recreation and habitation of the people.

There are a few epigraphs of Jātavarman Vira-Paṇḍya which refer to him as one who took Iḷam (Ceylon), Koṅgu and the Śōla-maṇḍalam (i.e. the Chola country), and who having conquered the powerful (Chōla) king was pleased to perform the anointment of heroes and victors at Perumbarrā Puliur (i.e. Chidambaram)⁴ and this king's perhaps identical with the Vira-Paṇḍya whose initial date according to Kielhorn, is A.D. 1253.

We also learn from other sources that Jātavarman Vira-Paṇḍya encamped at Chidambaram to collect tribute from his subordinates and to perform the 'Abhiśēka'. There are several epigraphs of Vikrama-Paṇḍya in Chidambaram which serve to set in a clearer light the doings of that ruler by confirming the conclusions derived from other sources. He is referred to by his titles Bhuvanika Vira and Koṅkai Kavala, and of having conquered the Venaḍu (i.e. Travancore) king at Podiyil. One of the epigraphs (329 of 1913) is of particular interest. It consists of six verses in Tamil of which five refer to a battle fought at Chidambaram (apparently on the banks of Vellāru, near Chidambaram) by a certain Muṇaiyan, Valliyan Adittan, chief of Panaisēyyar on behalf of the Paṇḍya (Miṇavan) against the Chōla (Vajavan). The author of the poem was Tāynalla-Perumal Munaiyadaraiyan *alias* Bhuvanikavira Tonḍaimaṇ. Though the historical details claimed by these epigraphs may be a highly overdrawn picture, yet there is a dim historic truth underlying these references.

There are six epigraphs in the Chidambaram temple⁵ referring to Maṇavarman Vira Paṇḍya and they suggest the possibility of this king being the successor of Maṇavarman Vikrama-Paṇḍya and also the contemporary of Ravivarman Kulasēkhara.

From the latter half of the 12th century, the chōla power became more and more weak and there were also signs of decay among the Paṇḍyas. The times were thus highly favourable for feudatories to rise into prominence. For instance, the Sambuvarayans who held a subordinate position

¹ 338 and 363 of 1913.

² 535 of 1920.

³ 546 of 1919.

⁴ 131 of 1907, 437 of 1917.

Refer 192 of 1914 of Jātavarman Vira-Paṇḍya.

⁵ 279, 320, 328, 351 and 386 of 1913.

under the Chôlas and had done signal service to them under 4 successive sovereigns Rājarāja II, Rājadhirāja II, Kulottuṅga III and Rājarāja III now began to assert themselves. There are numerous inscriptions of the later Pallava kings who held sway in S. Arcot. Most prominent among the chiefs who took advantage of the weakness of the Chôlas in the 13th century was Kopperunjingadeva. He asserted his independence and ruled for about 30 years, and it is evident from some epigraphs that his dominion extended southward beyond the Coleroon into the Tanjore District. Some of Kopperunjingadeva's epigraphs are found in the Nataraja Temple and the Tillai Amman Temple in Chidambaram. These epigraphs mention some of his chief officers, notably Perumāl Pillai *alias* Śōlakōṇ, Teṇṇavaṇ Brahmādhiraṇ, Jayatunga-Pallavarayan, and Tillai Ambalapallavarayan. The earliest references to the local Tillai Amman Temple are to be found in the inscriptions of Kopperunjingadeva and one of the epigraphs is of particular interest as it refers to "the Temple (Srikoil) of the Pidāri called Tīruchirrambala Mākāli" (312 of 1913). Mr. Krishna Sastri has pointed out that, according to an inscription at Tripurantaka (Kurnool District), a certain king, Maharaja Sinha, built the eastern *Gōpura* of the Nataraja Temple and that this king was evidently Kopperunjingadeva. Three pillars¹ for the merit of his master—Perunjingadeva—one on the west entrance into the second *prākāra* of the Temple, one on the *Gopura* at the main entrance into the Sivakami Amman shrine, and one now found on the door-post of a new entrance close to the eastern *Gōpura*—were set up by Śōlakōṇ for the merit of his master. Kopperunjinga's donations to the temple and his devotion to the god at Chidambaram are evidenced by the epigraphs as well as by his title, *Kanakasabhapati-Sabha Sarvakarya-Sarvakala-Nirvahakah*.² It may be incidentally noted that according to an epigraph in modern Tamil the eastern *Gopura* of the temple was repaired and an *Agrahara* was founded by Suppammal, the mother-in-law of Pachaiyappa Mudaliar of Kanchipuram. That a part of the South Arcot district came into the temporary possession of a ruler of Kerala, Kulasekbara, in the early part of the 14th century is evident from one of the epigraphs in the Chidambaram temple.

Inscriptions of the Hindu dynasty of Vijayanagar are found all over South Arcot which formed a part of Tondaimandalam. There are several epigraphs in the temple relating to Vijayanagara kings of the earlier and later dynasties. The earliest record is that of Dévarāya II, dated S. 1349 (i.e. A. D. 1428). An inscription³ on the north wall of the Kaṇṇaga Vinayaka shrine, in the western *Gopura* of the temple records the fact that 'the King ordered certain irregularities in temples and temple lands to be set right'. The full text is worth quoting as it discloses the lines on which the temples were supported, and their affairs were regulated by the king. The King's order ran as follows.

"As we have been informed by the *Maheśvaras* and *Marudavanāchchivan* that the king's officers in the villages belonging to the temples are unjustly collecting the taxes called *Kanikkai*, *Arasuperu*, *Karanakkar*,

¹ 321, 324, 325 of 1913.

² 418 of 1922, 286 of 1921, 197 of 1905, 419 of 1893.

³ 376 of 1913. A. R. E. 1914, p. 97.



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viseshadayam, ulamanji, etc., representing these to be dues payable to the palace; that the villagers taking up on mortgage the lands purchased, presented or otherwise owned by the temples, stubbornly refuse to give back those lands to the temples and that as a consequence the temple tenants have abandoned the villages causing thereby the stoppage of worship in these temples, we order that the taxes mentioned above shall no longer be collected, the only payable tax, however, being the *Sūlavariṇṇam*; that the worship, etc. in your temples shall be conducted in future under the direction of the said Marudavaṇachchivaṇ and that temple lands shall in no case be let out on (long) lease, nor shall they be assigned to anyone as tax-free hereditary property, free gift or *bhaṭṭavritti*."

Krishṇa-deva-Raya (1509-1530), who is known to us as one of the most famous of Vijayanagara kings, has left a monument of his greatness in the Chidambaram temple. The northern *Gōpura* of the temple was built by him in memory of his victories in the north¹ (Ś 1438 i.e. about A.D. 1516). One of these records registers the fact that Krishṇadeva 'after having started on a campaign against' Simhādri-Pottunūru, planted a pillar of victory there, and returning thence, he paid a visit to Ponnambalam (i.e. Chidambaram), worshipped the God and built the northern *Gōpura* of the temple.

Another epigraph on the eastern *Gōpura* of the temple records the grant (Ś. 1443 i.e. A.D. 1522) of the village of Chidambaranathapuram to the temple by Maṅgaraśan who is presumed to be identical with Taraṇikka Maṅgarasayyan, who was the Viceroy of Krishṇa-deva-raya in Tiruvaḍi-rājya (South Arcot district).²

The Gōvindarāja shrine in the temple has a long and eventful history. There are literary and epigraphical references. It is mentioned by the Alvēars, Kulasekhara and Tirumangai-Mannan. The poet-saint Maṇikkavasagar refers to it in his famous '*Tiruchchirrambalakovai*' (Stanza 86). The Kulottuṅga-Śolan-Ulā and the Rājarājan-Ulā composed in honour of Kulottuṅga II and Rājarāja II respectively refer to the tradition that Kulottuṅga II, a bigoted Saivite ordered the image of Govindarāja to be thrown into the sea. The earliest epigraphical reference in the temple is a record of the Vijayanagara King, Achyutayya Mahārāja (dated Ś 1461 i.e. A.D. 1539) who ordered that the image of Tillai-Govindarajaperumal at Perumbarrā-Puliyūr might be set up according to the ritual of Vaikhānasa Sūtra and granted 500 *pon* which was the income of 4 villages for the upkeep of daily worship.³ On the other hand, according to the Vaishṇaviṭe *Guruparambaras*, the *Chitrakutā* was destroyed in the time of Ramanuja (1016-17 A.D.-1137 A.D.), the image of Govindarāja was removed by the Vaishnavas to Tirupati and consecrated there by Ramanuja. Kulottuṅga II ruled from 1135 to 1146 and jointly with Vikrama-Chōla from 1123 to 1135. So the

¹ 174 and 175 of 1892, 371 and 374 of 1913. For Texts of these Inscriptions, Vide S. I. Inscriptions Vol. IV, Nos. 622 and 623.

² 333 of 1913.

³ 272 of 1913.

removal of the Vishnu shrine from Chidambaram and its consecration at Lower Tirupati should have taken place somewhere between 1123 and 1136. The next literary reference to the shrine is in the time of Vedānta Desika. According to the *Guruparambara*, Vedānta-Desika took advantage of an internal commotion in Chidambaram to make Gopannārāya of Gingee to re-establish the image about 1370. On the other hand, the *Prapannāmritam* attributes this honour to Mahāchārya or Doḍḍācharya of Sholinghur and of Rama Raya of 'Chandragiri' whom it supposes wrongly to be a king and successor of Krishṇa-deva-Rāya. The present inscription would support the version of *Prapannāmritam* if Rama Raya is taken to be a mistake for Achyuta Raya. If not, we should have to suppose that after Achyuta Rāya there was another Śaivite attempt to remove the idol and a final restoration of it by Mahāchārya late in the 16th century.¹ Another epigraph, an unfinished record of the Vijayanagara King, Achyutadēva-Mahārāya (1530-1542) records the re-consecration of Govindarajasvamin at *Chitrakūta* by the same ruler.²

An epigraph on a slab in the Paśupatiśvara temple at Tiruvēshkalam records the grant of that village to the Chidambaram temple by Achchutappa-Nāyaka, son of Siru-Śevappa-Nāyaka for the merit of Tirumalai-rajayan (i.e. the Kārṇāta king, Tirumala I).

A few epigraphs of the Vijayanagara kings—Ranga II and Venkata I (1586-1614) of the Kārṇāta dynasty are found in the Chidambaram temple³ and one of their chiefs *viz.* Vaiyappa-Krishṇappa-Koṇḍama-Nāyakkar who is frequently mentioned in these inscriptions presented several villages to the temple and also declared tax-free all the villages owned by the temple from early times. Muthu-Krishṇappa-Nāyaka, son of Koṇḍama-Nāyaka is said to have made some repairs to the temple during the time of Venkata I.

One of the epigraphs of the temple relating to the reign of the Vijayanagara King—Ranga VI, is of particular interest.⁴ It is dated Śaka 1565 (i.e. A.D. 1613) and records that the King repaired the big Maṇḍapa in front of the Tillai Govindarajaswami shrine, the *gōpura* of the shrine, the *vimanas* of the Goddesses, Puṇḍarikavalli-Nāchiyar and Sūḍikoḍutta-Nāchiyar and the *Maṇḍapa* in front of the shrine of Tiruvali-*Alvān*.

Before we proceed to deal with the later vicissitudes of the temple in the Carnatic wars of the 13th century, it is desirable to refer to a few things which are of great interest to the student of village economics and administration. That the revenue survey of the Tamil country was made from time to time by some of the kings is known to us from early epigraphs.⁵ An inscription of the Chidambaram temple⁶ also confirms this fact by referring to a land survey in the 16th year of Kulottuṅga I. The existence of a land survey committee (*nilam-ālavupaḍipperumakkal*) of the village assembly of Perumbarra-puliyur

¹ Ins. S. Dts., P. 162, No. 1.

² 1 of 1915, Ep. Rep. 1915, p. 81.

³ 348, 349, 359, 369 of 1913.

⁴ 271 of 1913.

⁵ 199 of 1917, 285 of 1918.

⁶ 317 of 1913.

which functioned in respect of land revenue assessment of temple lands is attested by one of the Chidambaram epigraphs.¹ Another epigraph² gives minute fractions of *velis* and land measures and is therefore of great interest to the student of economic history.

There are several epigraphs referring to the remission of assessments on lands granted to the temple. We learn that the village assembly (*mula parushaiyar*) dealt at times with the temple lands.³ Original documents, pertaining to gifts of land made to the temple were preserved in the treasury of the temple and engraved on its walls.⁴ The royal order which made known these arrangements is known as 'Tirumandira-Olai',⁵ the village accountants are known as 'Varikkuru Sevyar'.⁶ Eight different classes of land are referred in one of the Chidambaram inscriptions (No. 262 of 1913). All the details concerning land such as its extent, ownership, assessment, classification, etc., were noted in village and temple registers by clerks specially appointed for the purpose. Registry in village books, and enjoyment were considered essential to establish one's ownership in any property.

One of the inscriptions of Sundara Paṇḍyadeva on the south wall of the 1st *prakara* of the Nataraja temple at Chidambaram⁷ gives interesting details of the founding of an *agrabāra* named Vikrama-Paṇḍya Chaturvēdimāṅalam on the western side of Perumparaipuliur and its presentation to 108 learned Brahmins. (For the maintenance of these and of other village accessories (*grāmaparikara*) the village Rajāsikhāmaninallur *alias* Puliyaṅgudi, on the western bank of Ponneri was acquired and granted being divided into 147½ shares (*pangu*). The inscription is worth quoting in full as it is one of the few inscriptions relating to the foundation of a new village.

The village granted was called Vikrama-Paṇḍya-Chaturvedimāṅalam evidently after the name of an unknown brother or father (*nāyanār*) of Sundara-Paṇḍya. In the centre of it was also established the temple of Vikrama-Paṇḍyēśvara similarly designated. The village was intended to accommodate primarily 108 Brāhmaṇas among whom were many well-versed in *vēdas* and *śāstras* and able to expound the same. Four *vēlis* of land were purchased for the village site and included within it the temple premises, the house sites of the 108 Brāhmaṇas mentioned above, of men whoever in charge of the village library (*Sarasvati-bhaṇḍārattāi*) and of other village servants (*paṇimakkal*). In purchasing the land with its trees, wells, paths, channels (?), embankments, indicating land-divisions (*bhājāstraya*) and all other benefits, the rights and privileges of the old tenants and title-holders were completely bought up. The right of way was secured for the Brāhmaṇas to walk to the tank Kāvarkulam, everyday, for the purpose of performing the *San-dhyāvandana* prayers. Land for grazing the cattle was also provided for. Also for the maintenance of the 108 Brahmin families and others were

¹ 262 of 1913.

² 457 of 1902.

³ 288 and 296 of 1913.

⁴ 298, 299, 306 and 309 of 1913.

⁵ 299, 310, 311 of 1913.

⁶ 311 of 1913.

⁷ 277 of 1913.

acquired 117½ *vēlis* of land in the village of Rājasikhāmaninallur alias Puliyānguḍi. The Brāhmanas evidently received each a full *vēli* of land. The following other vrittis were also settled:—teachers of the *Vēdas*, 3; teachers of the *Sūtras* 1, two doctors 1½; *ambadayas* ? ¼; village accountant ¼; drummer ¼; potter ¼; blacksmith ¼; carpenter ¼; goldsmith ¼; irāṅkoli ¾; barber ¾; washerman ¼; village watchman (*pāḍi-kappāṇ*) ¾; and the village servant (*Vettiyaṇ*) ½. Of the *natta* land outside the *agrahāra*, 'Brahman quarter', three parts were set apart for *Vellān-Kāniyālar* and the remainder for other professionals (?). The fruit trees, gardens, ponds, water-pits, grazing grounds, irrigation channels, uncultivable waste, embankments (?) of fields and pathways included in the village site were made over (to the donees) as per customary law. All taxes were excused but it was stipulated that from the 14th year of the king 500 *kaḷam* of superior paddy, was to be measured out every year to the temple at Chidambaram for conducting the *Sandi*, Ellāṇḍalaiaṇ-Perumāl Sandi, and that all lands which belonged to temples (Tirunāmattuk kaṇi) must be demarcated by stones marked with the trident'.¹

The later struggles in the Carnatic between the English and the French for supremacy do not concern us here except for one important event connected with the Chidambaram temple.² The temple was used as a fort first in 1760 and later in 1780. The French took Chidambaram in 1753 and held it during the war. It surrendered to Major Monson on 12th April 1760. In 1760 Colonel Coote after defeating Lally at Wandiwash and driving him back into Pondicherry possessed himself without much trouble of Cuddalore and Chidambaram previously to taking Pondicherry which fell in January 1761.

In 1781 Coote was defeated in a night attack on the fortified pagoda then garrisoned by Hyder. The attacking party under Coote's personal direction were repulsed with considerable loss after forcing their way through two of the three enclosures of the western gateway of the temple. It was during this disturbed period that Nataraja was removed from his shrine by the Dikshitars and taken over to Tiruvarur (in the Tanjore district) for safety. An inscription in *grantha* character, in the form of a '*sloka*' in the 1000-pillared '*mantapam*' refers to this fact and says that it was in the year Saka 1695, Kali 4874 (in the month of Masi *Kṛishnapatcha*, *mula nakshatra*, *thriyothasi thithi*) that Nataraja came back to Chitsabha from Tiruvarur.

(To be continued.)

¹ A. R. E. 1914, part II, para 18.

² Cambridge. *War in India*, p. 131. Orme's History Vol. III, (4th Ed.) gives the plan.

On the Group of the Miquel-Clifford Configuration

By

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1. Let C_1 and C_2 be two straight lines in a plane. We denote their intersection by $C_{1,2}$ and call it the *Miquel Point* of the 2-line. Three lines C_1, C_2, C_3 taken in two's determine three such Miquel Points $C_{2,3}, C_{3,1}, C_{1,2}$ which lie on a circle $C_{1,2,3}$, the *Clifford Circle* of the 3-line. With four lines C_1, C_2, C_3, C_4 we shall have four Clifford Circles $C_{2,3,4}, C_{3,4,1}, C_{4,1,2}, C_{1,2,3}$ which are concurrent at the focus of the parabola touching the four lines. This is the Miquel Point $C_{1,2,3,4}$ of the four-line, the notation being so framed that

- (i) an even number (including zero) of suffixes indicates a point and an odd number a circle; ... (1. 1)
 and (ii) the suffixes of incident elements—a circle and a point—agree except for one additional suffix in the case of one of them. (1. 2)
 We shall, throughout this paper regard the order of the suffixes as immaterial, so that

$$C_{rst} = C_{srt} = C_{rts} = \dots = (rst) \quad (r, s, t = 1, 2, 3, \dots)$$

the C's being sometimes omitted altogether as in the last one.

The configuration determined by the 4-line contains 4 lines, 4 circles and 7 points. It was pointed out by Prof. Neville¹ that when the whole figure was inverted with respect to a circle, thus replacing the straight lines by concurrent circles, the resulting figure, both in this case and in the general case of n -lines to be discussed later, became symmetric in the sense that any set of concurrent circle could play the same role as the inverses of the straight lines from which the figure was built up. The real content of Prof. Neville's suggestion is, therefore, that the figure should be viewed from the standpoint of Circle Geometry *i.e.* the Geometry of the plane treated with minimal co-ordinates subject to independent linear transformations.² When the metrical plane is thus treated as a double-binary space, the essential distinction between the line and the circle disappears, and the lines are merely circles through a definite *point at infinity*. This point has geometrically the same status as any other point and may be transferred anywhere in the plane by an appropriate transformations of the binary co-ordinates. By naming this point C we shall be preserving the essential features (1. 1) and (1. 2) of our notation. It will be this standpoint that will be adopted hereafter, and it will be seen that it makes an inversion of the whole figure unnecessary.

¹ E. H. Neville. The inverse of the Miquel-Clifford configuration. *Journal of the Indian Mathematical Society* Vol. 16. (1926) Pages 241-7.

² The examination of configurations of one Geometry from the standpoint of

With C the figure now becomes an S_4 configuration of 8 circles and 8 points of which 4 circles pass through each point and 4 points lie on each circle. The figure may be reconstructed from the circles concurrent at any of the 8 points say (12). The four circles through this point are (2), (1), (123) and (124). We shall now introduce the convention that

when the same suffix is repeated twice, both may be suppressed ; in other words, the addition of a suffix is equivalent to its omission. (1. 3)

It is important to notice that this does not interfere with the property (1. 1), and that (1. 2) will still continue to hold for incident elements so long as the number of their suffixes differs by unity. Thus if A denotes any definite row of figures, the intersections of the circles (A_r) and (A_s) will be (A_{rs}) and (A), irrespectively of whether r and s occur in A or do not.

We may now rename the four circles through (12) thus :

$$(121) = (2), (122) = (1), (123), (124)$$

The intersections of the first three other than the starting point (12) are :

$$(1212) = () = C, (1223) = (13), (1213) = (23),$$

and the circle through these is (12123) which is the same as (3). Similarly the circum-circles of the other three triangles are 12 (234, 341, 412)¹ and these are all concurrent at (121234) or (34). The above argument shows that any of the 8 points could be taken as the starting point and the configuration built up from the four circles concurrent thereat in the same manner as it was originally built up from the four lines through C ; and that the Miquel point* of any of the eight points is the one obtained by adding 1234 to its suffixes, that is, by replacing its suffixes by their complimentary set. Thus the Miquel points of C, C_{12} , C_{1234} with respect to the four circles concurrent at them are respectively C_{1234} , C_{34} , and C.

2. With a fifth line C_5 , or from our point of view, a fifth circle through C, we have five Miquel points (1234), (2345), (3451), (4512), and (5123) by taking the lines in sets of four. Miquel proved in 1896 that these five points lie on a circle which we name appropriately (12345). This is the Clifford Circle of C with respect to (1), (2), (3), (4), (5). With

another with a different transformation group is a fascinating study opened up by the ideas developed in Klein's *Erlanger Programme*. Compared to the richness of the field, the amount of work done is astonishingly small. An idea of the new symmetries which arise from such a change of outlook may be gathered from the elaborate "Memoir on Cubic Transformations associated with a Desmic System" by Dr. R. Vaidyanathaswami (Supplement, *Jour. Ind. Math. Soc.* vol. 17) where the isogonal transformation associated with a metrical triangle is studied from the standpoint of the tetraeyclic plane.

¹ This means that the figures 12 are to be taken with each of the sets occurring within the brackets thus : (1234), (12341), (12412).

* From the standpoint of Circle Geometry, if C_1, C_2, C_3, C_4 are 4 Circles though

6 lines we shall have 5 such Clifford Circles which are, as Clifford showed in 1870, concurrent. Clifford proved¹ also that this alternation of concurrent circles and concyclic points persists indefinitely.

In his paper referred to earlier, Prof. Neville has pointed out that when the theorem of concurrence for 4 circles has been proved, the incidence theorems which are required as more circles are introduced through C will be obvious if we reconstruct the figure from any of the other points. Thus to prove that the five points (1234), (2345), (3451), (4512), (5123) are concyclic we start with say (12) and the three circles (123), (124), (125) through it. These form a triangle whose vertices are (1234), (1245), and (1253), and the circle through these — the Clifford circle of (12) with respect to the three circles through it — we name provisionally (12345). This circle also passes through (2345) = (123451) and through (3451) = (123452) since these are the Miquel points of (12) with respect to the circles 12 (3, 4, 5, 1) and 12 (3, 4, 5, 2) respectively.

Lastly, assume that the necessary incident relations have been proved for a figure generated from $n-1$ concurrent circles ($n > 5$) and that an additional circle C_n through C has been added. It has to be shown that the elements

$$(234\dots n), (134\dots n), (124\dots n), \dots (123\dots n-1) \quad (2.1)$$

are a set of concurrent circles (n even) or concyclic points (n odd). But if we start with (12) and the $n-2$ circles 12 (3, 4, ..., n) through it and reconstruct the figure, we shall successively encounter the intersection points 12 (34, 35, 45, ...) the circles through these three at a time 12 (345, 346, 456, ...) and finally the concurrent or concyclic set

$$12(456\dots n), \quad 356\dots n, \quad 346\dots n, \quad \dots \quad 345\dots n-1,$$

since the necessary incidence relations hold for figures generated from $(n-2)$ concurrent circles. But this set is included in the set (2.1) and consists, in fact, of all its members which contain the figures 1 and 2. Similarly all the members of (2.1) which have the figures 23 in common are concurrent or concyclic, so that since $n > 5$ the set as a whole denotes a system of concurrent circles if n is even, and concyclic points if n is odd. In either case we denote the element which has incidence with the set by $(123\dots n)$.

We thus have

for any value of n there is a homogeneous system of $2n-1$ circles and $2n-2$ points such that n circles pass through each of the points and n of the points lie on each of the circles.

C, there exists a direct circular transformation of period 2 (an involution) which interchanges (12) and (34), (14) and (23), (13) and (24). The Miquel point of any of the 8 points is the mate of that point in the involution. c.f. Ramamurti: A construction for the double points of an involution; *Jour. Ind. Math. Soc.* Vol. XVIII Pt. II pp. 257-559. It would be interesting to know if there is any such interpretation for the Miquel Point of configurations generated by more than 4 concurrent circles.

¹ Collected Mathematical papers: "Synthetic proof of Miquel's Theorem." Pages 51-54.

* Clifford's own proof is based on the properties of the n -fold parabola and applies only to the figure generated from n straight lines.

For a neat proof of the incidence theorems by methods of analytical geometry vide: V. Ramaswami Aiyar and M. Bhimasena Rao: Miquel Points and Circles and Centre Circles of a system of lines, *Journal Ind. Math. Soc.* Vol. 16 pp. 270-278.

We have still to show that in the general case the configuration is homogeneous in the sense that C plays no special role, and that the configuration could be reconstructed from the n circles concurrent at any of its points. This follows readily from the incidence relations which characterise the notation. Thus consider the point C_A where A is an ensemble of an even number of suffixes. The circles through the point are $(A1), (A2), \dots, (An)$; the intersections of these other than (A) are $(A12), (A23), (A31), (A14), \dots$ etc.; the circles through these taken in threes are $(A123), (A124), (A234), \dots$ etc. It will thus be seen that as more and more circles $(A1), (A2)$ etc., through A are taken and the corresponding configurations formed, the development mimics the process by which the configuration was originally developed from the circles $(1), (2), (3)$, through C . The last element reached will be $(A123 \dots n)$ which has suffixes complementary to A , and will be the Miquel Point of A if n is even, and its Clifford Circle if n is odd.

3. By the *group of a figure* we mean the group of permutations of the elements of the figure which preserves all the incidence relations therein. In our figure there are two kinds of elements, circles and points, and according as the automorphism is restricted to carry elements of each kind into themselves or not, we shall have a group in the narrower or wider sense of the word.¹ Let us consider the former.

Since the figure can be reconstructed from the circles concurrent at any of the points, the group is transitive. Let $T_1, T_2, T_3, \dots, T_n$ be n operators of which the first operating on the symbol of a point or a circle adds 1 to the suffixes already existing, the second adds 2, and so on. Since by (1.3) a twice repeated suffix may be suppressed, these operators are all of period two *i.e.*

$$T_1^2 = T_2^2 = T_3^2 = \dots = T_n^2 = 1. \quad (3.1)$$

Also since the order of the suffixes is indifferent

$$T_r T_s = T_s T_r = T_{rs} \quad (\text{say})$$

so that the group is Abelian. The group G thus generated is of order 2^{n+1} and the product of an even number of generating operators T_r constitute a subgroup H of order 2^n . The operators of H carry any point or circle of the configuration into any of its other points or circles. Thus we pass from $(rst\dots)$ to $(r's't'\dots)$ where both are elements of the same kind (*i.e.* both odd or both even) by means of the transformation

$$T_{rst\dots r's't'}$$

which belongs to H . Now the most general automorphism which carries points into points and circles into circles must carry C the point at infinity into some point say C_A , where A contains an even number of suffixes and it must carry the n circles $(1), (2), \dots, (n)$, through C into the circles $(A1), (A2), \dots, (An)$ in some order. And when both these have been fixed, the successive elements which arise when the figure is developed from C , and the circles through it, correspond to the elements arising likewise when the figure is developed from C_A and the associa-

¹ "Konfigurationsgruppe im engeren Sinne" and "Konfigurationsgruppe im weiteren Sinne" vide Levi: *Geometrische Konfigurationen*: S 27.

ted circles through it. Hence the most general automorphism of the figure which conserves the character of the elements is obtained when to the suffixes of each element are added any the same set A of an even number of figures, and the figures $1, 2, \dots, n$ are then subjected to an arbitrary permutation, the same for all the elements. Thus

The automorphic group of the configuration in the narrower sense is the product of the Abelian Group H of order 2^n and the general permutation group on n symbols.

On the other hand, if all the operators of the above group are multiplied by T_r , we shall have an automorphism which interchanges points and circles, and it is easy to see that every such automorphism is the product of say T_1 and a definite automorphism of the narrower group. Hence

The automorphic group of the configuration in the wider sense is the product of the Abelian group G of order 2^{n+1} generated by n permutable operations each of period two, and the general permutation group on n symbols.

Rotation of H α Dark Markings near the Equator

Compared with other Disc Phenomena *

BY

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In Kodaikanal Observatory Bulletin No. 89, Dr. Royds has investigated the rotation of H α dark markings, from the spectroheliograms of the years 1926-29, by measurements near the central meridian for successive rotations of the same marking. Owing to the paucity of markings of long duration near the equator during that period much weight cannot be attached to the values obtained for latitudes less than 15°.

To obtain reliable data for the rotation of markings near the equator, the H α spectroheliograms for the 8 years 1918-1925 have been now examined. The life of each marking was traced in the solar charts of the Kodaikanal Observatory for at least a revolution and a half. 117 such recurrent markings were then examined in the original photographs when they were near the central meridian. Measures were made of the longitudes of the western edges of the markings at 5° intervals of latitude. The times of actually crossing the central meridian were deduced for intervals of 5° of latitude assuming the approximate value of 13° per day for synodic rotation to reduce the positions near the central meridian to the actual time of crossing it. The synodic period of each marking at the several points were thus obtained and the daily sidereal angular motion deduced by taking account of the sun's motion.

The mean values for the whole period at 5° intervals of latitude near the equator of the synodic period, daily synodic angular motion and daily sidereal angular motion are given in Table A. The motion is assumed to be symmetrical with respect to the solar equator.

Table A.
Mean Rotation of H α Absorption Markings.

Latitude	0	5	10	15	20*	25*	30*	35*	40*	Means of all 15-1
No. of Markings	35	73	83	93	47	40	30	23	6	
Synodic Period	26.83	26.85	26.95	27.05	27.22	27.38	27.54	27.81	27.86	27.11
Daily angular velocity synodic	13.42	13.41	13.36	13.33	13.22	13.14	13.07	12.94	12.91	13.29
Daily angular velocity sidereal	14.40	14.40	14.34	14.30	14.21	14.13	14.06	13.93	13.90	14.27

In table B. has been collected, for purposes of comparison, the speeds of rotation of the sun at different latitudes as obtained from various disc

*(Summarised from Kodaikanal Observatory Bulletin No. 93 by kind permission of the Director.)

(From Table I Bulletin No. 89.)

phenomena. The values are taken from the latest available sources. The speeds for the 5° zones have been computed as the mean of the speeds at the boundaries of the zone.

Table B

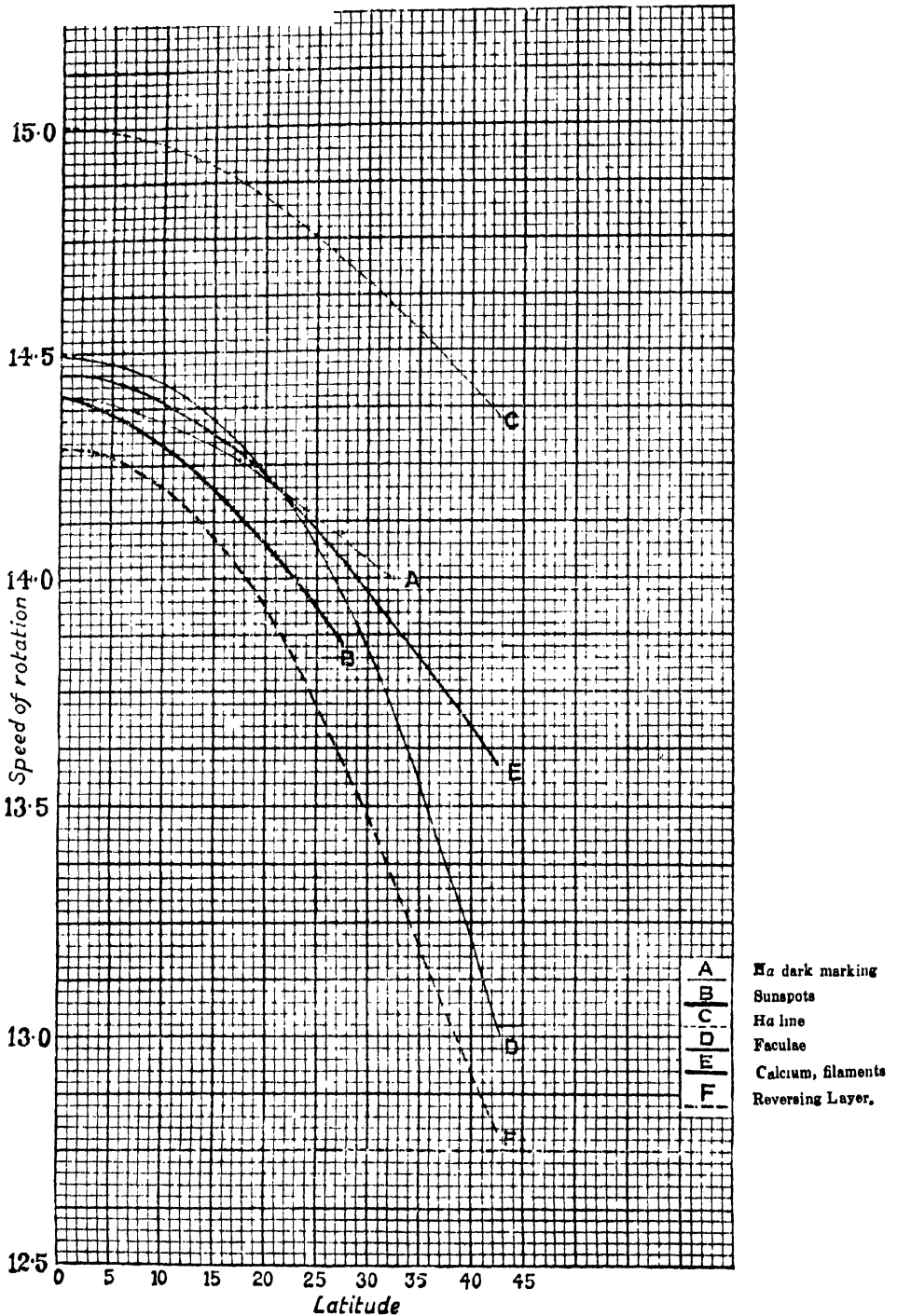
Velocities of Solar Rotation derived from Various Solar Phenomena

Daily sidereal Motion. Zone of latitude	H α dark mark- ing	Sun- spots	Facu- lae	Calcium Fila- ments	Spectroscopic determina- tions		
					Revers- ing layer	H α line	K Pro- minences
0- \pm 5	14.40	14.39	14.49	14.45	14.27	15.00	
\pm 5- \pm 10	14.37	14.33	14.46	14.42	14.26	14.98	17.1 (9)
\pm 10- \pm 15	14.32	14.25	14.40	14.36	14.16	14.94	
\pm 15- \pm 20	14.26	14.13	14.30	14.28	14.02	14.88	17.1 (18°)
\pm 20- \pm 25	14.17	14.01	14.16	14.17	13.83	14.80	
\pm 25- \pm 30	14.10	13.85	13.96	14.04	13.60	14.70	20.2 (25°)
\pm 30- \pm 35	14.00	...	13.71	13.89	13.55	14.60	
\pm 35- \pm 40	...	...	13.39	13.75	13.07	14.40	16.6 (35°)
\pm 40- \pm 45	...	...	13.02	13.59	12.79	14.36	17.3 (51°)

The above values are represented graphically in the figure. It will be noticed that the speed of rotation of the H α dark markings is practically the same as that of sunspots in the equatorial regions but is greater in higher latitudes. From the closeness of the values of the speeds of rotation of sunspots and H α dark markings near the equator it is to be inferred that these markings in the equatorial regions are anchored to the sunspots. It would appear that this is not true in higher latitudes. The equatorial velocity as determined from the displacements of the H α line are greater than that of the dark markings. If, as is generally assumed, these dark markings are projections of the prominences on the Sun's disc and as Evershed has shown the velocities increase with levels, an absorption marking seems to move slower than the gases constituting the prominence which exhibits itself as that marking.

The values of h_1 and h_2 obtained by Dr. Royds require modification in view of the more reliable values now available for equatorial regions. The revised values do not differ much from the old values and there is practically no change in the mean values of h_1 and h_2 . The difference between h_1 and h_2 is also unaltered and so the main arguments of the paper continue to hold.

In conclusion, I wish to express my thanks to Dr. Royds, for his valuable guidance and many suggestions.



Comparison of Speeds of Rotation.

A Statistical Analysis of the Medical Examination of Students of the Sri Minakshi College

(The Nucleus of the Annamalai University) for the years 1927-1928 and 1928-1929

By

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Annamalai University.

The medical examination of the College students of the Madras University was started in the year 1927-1928 and is limited every year to junior students only. It is conducted by a medical officer possessing an M.B. B.S., or L.M.S., degree or one with an equivalent qualification. The particulars to be noted and the physical measurements to be made by the medical examiner are given in a form which is practically the same for all the colleges of the Madras University and is the one now in use in the Annamalai University.¹ It is therefore possible, if detailed analysis of these inspections are available, to compare the results and obtain data sufficiently large for fixing fairly accurately the general average physical measurements of the South Indian student at different ages.

In their first report published in July, 1921, the Student Welfare Committee of Calcutta say, "We do not at present know what is the standard of a student's weight at a certain age in India. Should we be guided by the weight of a student in the foreign country? Is the Indian boy to be as heavy and as developed as a foreigner at a certain age?" And again in their report for the year 1928. "Students very often approach us with a request to examine them and let them know whether they are underweight or overweight, whether their height is normal or not and so on. Unfortunately hitherto we had no data to enable us to pass any reliable verdict on normality. When the Student Welfare Committee began its work, it was one of our aims to establish the norms for the different items in the case of Bengali students. Now that we have had a record of over 7,000 cases, we think we are justified in fixing down the limits of normality. The fact that the averages for the different items have now become practically constant, would indicate that normal limits could be determined with a sufficient degree of reliability to meet all practical requirements."²

I am afraid that in the year 1932, we are perhaps in precisely the same position here in South India as the Student Welfare Committee found itself in 1921.³ A brief analysis of the medical inspection of the students of the Sri Minakshi College for the first two years is attempted

¹ A copy of the form in use at the time of this report in the colleges of the Madras University may be found in pages 66, 67 of the report of the Inter-University Board, India, for the year 1930-31.

² *Calcutta Review*—Vol XIII, Appendix page 8.

³ This seems to be the first attempt at an analysis of the results of medical inspection of the college students of the Madras University.

here. The college grew into a University in 1929 and as an independent body evolved its own rules regarding physical training. As the training of the physique may have some influence on the physical measurements the figures for the year 1930-31 and succeeding years will have to be analysed separately. The figures for 1929-30 may act as a connecting link between the period under examination and the period from 1930-31, so far as the Annamalai University is concerned. The publication of the data available so far from the colleges of the Madras University or even the accumulation of the data of medical inspection of the University for a number of years will be helpful for the purpose.

Three hundred and twelve students were examined in the year 1927-28 and 311 in the next year, all of whom were males. An attempt has been made to compile separately the statistics for science students and for arts students; the students with Mathematics, Physics, Chemistry as optional subjects are classed as science students. They are distributed in the several classes as follows:—

Table I

CLASS				1927-28	1928-29
ARTS					
Inter I	...	...		85	82
B.A. I	...	...		61	74
Hons. I	...	...		16	13
	Total	...		162	169
SCIENCE					
Inter I	...	...		94	89
B.A. I	...	...		56	53
	Total	...		150	142
GENERAL TOTAL				312	311

The medical examination is at present confined to measurements of bodily dimensions and to the detection of visual, developmental and other bodily defects. There is no provision for tests of functional capacities. Quantitative data are available only for (i) age, (ii) height, and (iii) weight. The original data of these measures have been sorted and are set out in frequency groups so as to give the number at each year of age, inch of height and interval of five pounds of weight.¹

AGE

The age entered in Table II is that attained on January 1st in the academic year in which the medical examination was conducted, by assuming that on the average all the births recorded in any calendar year may be centred at July 1st of that year.²

¹ As the frequency distributions had to be arranged only in so far as individual records were available there are some discrepancies in the totals of the several traits.

² I have generally chosen the class intervals adopted by Mr. K. B. Madhava, so that comparison of these figures with those for Mysore may be possible.

Table II

AGE			1927-28	1928-29
14·5	...	...	2	...
15·5	...	...	9	7
16·5	...	...	31	36
17·5	...	...	55	54
18·5	...	...	64	63
19·5	...	...	50	61
20·5	...	...	43	40
21·5	...	...	22	19
22·5	...	...	15	15
23·5	...	...	15	8
24·5	...	...	4	5
25·5	...	...	1	2
26·5	...	..	1	...
* * *	* *
32·5	...	...	...	1
Total			312	311

The values of the mean, standard-deviation, co-efficient of variation, β_1 , β_2 , k of the distribution are given in Table II-A for the two years. These values although numerically different are statistically speaking the same, the differences being most probably due to fluctuations of sampling. The frequency diagrams appear to be of the Pearsonian type with moderate skewness and with values of the criterion slightly different from zero. But it is interesting to note that the values of the three constants β_1 , β_2 , k , for the year 1928-29 do not warrant this conclusion. An examination of the original distribution shows that in that year there is an abnormal case of a student with age 32·5 which is responsible for this difference. If this abnormal case be left out of account (as it is really exceptional) the values of β_1 , β_2 , k in 1928-29 come very near to their values for the previous year. This lends colour to the remark of Mr. K. B. Madhava that even in regard to the age in the make-up of an educational institution of a certain status there is some permanence in distribution.¹

Table II-A

			1927-28	1928-29
Size of the universe			312	311
Mean age	...	...	19·218	19·172
Standard-deviation	...	...	2·274	2·122
Co-efficient of variation	...	...	11·832	11·069
β_1	...	...	0·111	1·689
β_2	...	...	2·366	7·444
k	...	...	0·074	0·487

¹ K. B. Madhava : Report on the Statistical Analysis of the Medical Examination of students of the Mysore University, Mysore, 1928, page 5.

The mean ages are recorded below according to (i) class in which the student is studying, (ii) his community mainly divided as Brahmin and non-Brahmin, (iii) his bodily, (iv) his visual and (v) his nutritional condition as declared by the medical examiner.

Table II-B

		1927-28		1928-29	
		ARTS	SCIENCE	ARTS	SCIENCE
Intermediate I	...	18.36	18.13	...	18.48
B.A. I	...	21.35	19.89	...	20.89
Hons. I	...	19.88	—	...	19.42
Sectional	...	19.62	18.78	...	19.62
Body good	...	19.87	18.92	...	19.72
Body defective	...	18.75	18.29	...	18.85
Vision good	...	19.63	18.11	...	19.42
Vision defective	...	19.60	18.60	...	19.94
Brahmin	...	19.36	18.39	...	19.25
Non-Brahmin	...	20.19	20.22	...	20.37
Poor nutrition	...	18.50 ¹	17.00	...	18.43
Fair nutrition	...	19.36	18.43	...	19.53
Good nutrition	...	20.17	19.56	...	20.06
Very good nutrition	...	...	20.50	...	...
General	...	19.22, ...		19.17 ...	

On comparing the differences of these means with their probable errors, we notice that (i) the mean ages according to classes studied in differ to about the same extent as their pedagogical standards indicate; (ii) the mean ages of Honours students are consistently lower than B.A. students though pedagogically they are of the same standard; (iii) the mean ages of students with bodily defects are constantly lower than those of others, these being perhaps the effect and the cause.

HEIGHT

The frequency distribution by height is given in Table III below. The height entered in each row is the middle of the interval of one inch in which it is included, by assuming that on the average all the records in any interval may be centred thereat.

Table III

HEIGHT	1927-28		1928-29	
54.5	1
55.5	3	...
56.5	2	1
57.5	2	2
58.5	5	4
59.5	3	7

¹ The averages according to nutritional condition may be noted. There is a progressive increase. This may be due to bias if not accidental.

Table III—(contd.)

HEIGHT			1927-28	1928-29
60·5	...	...	11	15
61·5	...	...	26	25
62·5	...	...	43	31
63·5	...	...	34	51
64·5	...	...	41	51
65·5	...	...	59	51
66·5	...	...	49	30
67·5	...	...	20	25
68·5	...	...	7	7
69·5	...	...	3	6
70·5	...	...	2	2
71·5	...	...	...	1
72·5	...	...	...	...
73·5	...	...	1	...
Total ...			311	310

Table III-A gives the central tendencies and measures of scatter, variability, criterion, etc., for each year of investigation. The mean is steady but the standard-deviation and therefore the co-efficient of variability show large deviations (about four times the probable error) which might not very improbably be due to fluctuations in sampling. It is unsafe to make any deduction until records are accumulated for years and compared.

Table III-A

			1927-28	1928-29
Size of universe	...	...	311	310
Mean height	...	...	64·298	64·265
Standard-deviation	...	...	2·584	2·305
Co-efficient of variation	...	...	4·019	3·587
β_1	...	...	0·288	0·163
β_2	...	...	4·188	5·147
k	...	...	0·155	0·035

The frequency diagrams are of the Pearsonian type with slight skewness and with values of the criterion slightly different from zero. The values of the three constants given in the table give a type very similar to the distribution of age groups; this is rather surprising. Height is supposed to be a physiological function peculiarly affected by the Law of Normal Probability and other investigations on height variations have invariably resulted in giving distributions very markedly symmetrical. The data considered, however, are rather inadequate to assert anything; analysis of the data for subsequent years thus increasing the quantity of material under examination is necessary.

The mean heights of the students according to their classes, community and other pathological conditions are set out in full in Table III-B below.

Table III-B

			1927-28		1928-29	
			ARTS	SCIENCE	ARTS	SCIENCE
Intermediate I	...	...	64.02	63.59	64.24	63.09
B.A. I	...	...	65.21	64.77	65.19	64.65
Honours I	...	...	64.81	...	65.50	...
Sectional	...	...	64.54	64.03	64.75	63.68
Body good	...	...	64.81	64.15	64.86	64.02
Body defective	...	...	63.61	63.62	64.00	62.50
Vision good	...	...	64.75	64.09	65.09	63.67
Vision defective	...	...	64.17	63.94	64.20	63.69
Brahmin	...	...	64.36	63.79	64.38	63.36
Non-Brahmin	...	...	64.95	64.91	65.54	65.04
Poor nutrition	...	...	62.64	63.36	62.86	61.09
Fair nutrition	...	...	63.89	63.27	64.73	64.05
Good nutrition	...	...	65.66	65.30	65.25	64.57
Very good nutrition	...	...	...	64.50	...	...
General	...	...	64.30		64.26	

WEIGHT

The following table gives the frequency distribution by weight during the period. The weight entered is the middle of the interval of five pounds in which it is included by assuming that on the average all the records in any interval may be centred there.

Table IV

WEIGHT			1927-28	1928-29
60	...	...	...	1
65	...	...	1	1
70	...	...	3	4
75	...	...	4	2
80	...	...	15	7
85	...	...	8	17
90	...	...	22	10
95	...	...	37	29
100	...	...	42	50
105	...	...	39	27
110	...	...	47	58
115	...	...	28	31
120	...	...	23	19
125	...	...	16	22
130	...	...	6	12
135	...	...	4	4
140	...	...	6	5
145	...	...	4	1
150	...	...	2	1
155	...	...	1	4
160	...	...	...	3

Table IV—(contd.)

WEIGHT			1927-28	1928-29
165	...	...	1	...
170	...	...	...	1
175	...	...	...	...
180	...	...	...	...
185	...	...	2	...
Total	...	...	311	309

These frequency diagrams are very uneven and are as usual skew. The values of the mean, standard-deviation, co-efficient of variation β_1 , β_2 , k are given below in Table IV-A.

Table IV-A

			1927-28	1928-29
Size of universe	...	...	311	309
Mean weight	...	...	106.51	108.06
Standard deviation	...	...	16.954	16.697
Co-efficient of variation	...	...	15.918	15.451
β_1...	...	...	0.826	0.249
β_2...	...	...	5.701	4.291
k...	...	...	0.263	0.110

The mean weights of the students for the several sub-classes (as mentioned in relation to age) are as usual appended. This table may call for a few comments, (a) The medical examiner is requested to classify the individuals according to his estimate of nutritional development and they have been classified as poor, fair, good and very good (in some exceptional cases). Though such a subjective classification is

		1927-28		1928-29	
		ARTS	SCIENCE	ARTS	SCIENCE
Intermediate I	...	104.47	100.70	106.73	100.34
B.A. I	...	114.02	111.70	115.55	111.98
Honours	...	104.37	...	110.77	...
Sectional	...	108.06	104.83	110.86	104.73
Body good	...	110.72	106.09	111.71	108.17
Body defective	...	98.75	100.59	104.21	92.97
Vision good	...	108.17	104.67	111.88	104.04
Vision defective	...	107.85	105.08	109.22	105.56
Brahmin	...	106.85	103.21	110.31	104.26
Non-Brahmin	...	110.69	110.78	112.04	106.73
Poor nutrition	...	95.00	87.14	90.00	82.76
Fair nutrition	...	99.63	95.89	106.03	102.09
Good nutrition	...	122.38	120.45	124.21	122.77
Very good nutrition	...	...	155.00	—	—
General	...	...	106.51	108.06	1008-8

open to some amount of personal bias the table shows that clearly distinguishable regions are embraced by these divisions and that these represent continuously increasing degrees of development.¹ (b) The mean values of the groups included in the classifications "Body good" and "Body defective" are widely separated; this shows that the pathological or nutritional development clearly impresses its significance on the recorded weight of an individual. (c) The condition of the eye does not appear to have any marked influence on the weight. (d) The mean weights of students divided according to classes show similar differences, a part of which at least must naturally be due to the time interval that ordinarily separates the stages. It is significant, however, that the science student is in general lighter than the arts student of similar status and that the honours student is also in general lighter than the pass student of similar status.

The medical officer is also expected to record the developmental and other defects, if any, in the body of the subject under different heads, skin, teeth, nose, throat, eye, ear, etc. It is obvious that at a single and casual examination several defects would have escaped detection and diagnosis. The time available for finding out such defects is limited and the process of diagnosis was confined merely to the observational method and even such of the defects as have been localised work up to a high case rate. An analysis of these defects will be attempted in the next issue.

¹ Some allowance will, of course, have to be made for the difference in mean ages noted in Table II-B. The difference is still noticeable.

On the Indeterminate Equation $x^y - y^x = a$

BY

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Theorem I:—If $N(a)$ is the number of solutions of

$$0 < x^y - y^x \leq a,$$

where x and y are positive integers > 1 , then

$$N(a) \sim \frac{1}{2} \frac{(\log a)^2}{(\log \log a)^2}$$

Let r be a given positive integer, $m > r$, and

$$r^m - m^r \leq a. \quad (1)$$

Now

$$\log r^{r+1} = (r+1) \log r,$$

$$\text{and } \log (r+1)^r = r \log (r+1) = r \log r + 1 - \frac{k}{r},$$

where $0 < k < 1$.

$$\therefore \log \frac{r^{r+1}}{(r+1)^r} = \log r - 1 + \frac{k}{r}.$$

$$\text{Therefore, when } r \geq 6, \quad \frac{(r+1)^r}{r^{r+1}} < \frac{1}{2}.$$

Hence, when $m > r \geq 6$, if $r^m - m^r \leq a$,
that is, if,

$$r^m \left(1 - \frac{m^r}{r^m}\right) \leq a,$$

then $\frac{r^m}{2} \leq a$, because $\frac{m^r}{r^m}$ decreases when m increases beyond r .

Consequently,

$$m \leq \frac{\log a}{\log r} + \frac{\log 2}{\log r}. \quad (2)$$

Also, from (1)

$$m_{\max} \geq \frac{\log a}{\log r}. \quad (3)$$

Hence

$$m_{\max} = \frac{\log a}{\log r} + O(1) \quad \text{from (2) and (3).}$$

So when r is a given integer not less than 6, the number of solutions of $r^m - m^r \leq a$ is

$$\frac{\log a}{\log r} - r + O(1). \quad (4)$$

But the maximum value of r is given by $[x]$ where x satisfies

$$x^{x+1} - (x+1)^x = a.$$

Since $r > 6$,

$$a < x^{x+1} < 2a.$$

$$\therefore x = \frac{\log a}{\log x} + O(1) \quad (5)$$

$$\therefore \log x = \log \log a - \log \log x + O(1)$$

$$\therefore x = \frac{\log a}{\log_2 a} + \frac{\log a \times \log_3 a}{(\log_2 a)^2} + O\left\{\frac{\log a}{(\log_2 a)^2}\right\}$$

$$\therefore r_{max} = \frac{\log a}{\log_2 a} + \frac{\log a \times \log_3 a}{(\log_2 a)^2} + O\left(\frac{\log a}{(\log_2 a)^2}\right)$$

\therefore If T_r is the number of solutions of

$$0 < r^m - m^r \leq a,$$

then

$$N(a) = \sum_{r=2}^t T_r + O(1), \quad \text{where } t = r_{max}$$

$$= \sum_{r=2}^5 T_r + \sum_{r=6}^t T_r + O(1)$$

$$= S_1 + S_2 + O(1) \quad \text{say.}$$

Now

$$S_1 = O\left(\sum_{r=2}^5 \frac{\log a}{\log^2 r}\right) = O(\log a)$$

$$S_2 = \sum_{r=6}^t \left\{ \frac{\log a}{\log r} - r + O(1) \right\}$$

$$= \log a \left\{ \int_6^t \frac{dr}{\log r} + O(1) \right\} - \sum_{r=6}^t r + O(t)$$

$$= \log a \times \frac{t}{\log t} + O\left(\frac{t \log a}{(\log t)^2}\right) - \frac{t^2}{2} + O(t) + O(\log a)$$

$$= \left(\frac{\log a}{\log t}\right)^2 + \frac{(\log a)^2 \log_3 a}{(\log t)^3} + O\left(\frac{(\log a)^4}{(\log t)^4}\right)$$

$$\begin{aligned}
& -\frac{1}{2} \left(\frac{\log a}{\log_2 a} \right)^2 - \frac{(\log a)^2 \log_3 a}{(\log_2 a)^3} + O \left(\frac{(\log a)^3}{(\log_2 a)^3} \right) + O(\log a) \\
& = \frac{1}{2} \frac{(\log a)^2}{(\log \log a)^2} + O \left(\frac{(\log a)^2}{(\log \log a)^3} \right).
\end{aligned}$$

Theorem II:—If $N'(a)$ is the number of solutions of

$$x^y - y^x = a,$$

then when a exceeds a certain limit,

$$N'(a) \leq (1 + \delta) \frac{\log a}{\log \log a}.$$

When $r > 6$,

$$r^{r+t} - (r+1)^r < r^{r+t} - (r+t)^r.$$

Hence the maximum value that x can assume is given by

$$x^x + 1 - (x+1)^x = a.$$

Therefore, from 5,

$$x \leq (1 + \delta) \frac{\log a}{\log \log a}$$

It is probable that $N'(a)$ is bounded even when $a \rightarrow \infty$; it may be even 1. It may be remarked that the number of distinct integers a not exceeding N , which can be represented in the form (6) is greater than $\frac{\log N}{\log 2}$

Similar considerations hold also for the inequality $x^y + y^x \leq a$.

Algebraic (2, 1) Correspondence in the Gauss plane¹

By

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1. Any real point in the Gauss plane can be defined by the minimal coordinates w, \bar{w} , the parameters of the conjugate minimal lines which pass through that point. Hence an irreducible algebraic (2, 1) correspondence of the complex variables w and μ given by

$$F = \mu (a_{21} w^2 + a_{11} w + a_{01}) + (a_{20} w^2 + a_{10} w + a_{00}) = 0$$

determines a similar correspondence of the minimal lines of one system. But every minimal line w has one and only one real point (w, \bar{w}) on it. Hence, the induced correspondence of the real points of the Gauss plane is given by F and its conjugate \bar{F} . Throughout this paper let us suppose that $F = 0$ implies $\bar{F} = 0$. The object of this investigation is to study the above correspondence of the real points of the Gauss plane, when the locus of one of them is a circle.

Let us denote by $D(w)$ the apolar quadratic covariant of F i.e. apolar to F regarded as a quadratic in w for all values of μ and by $\Delta(\mu)$ the quadratic covariant in μ , the roots of which correspond in F , to $D(w)$. Also, let us refer to the points in the plane corresponding to the roots of $D(w) = 0$ and $\Delta(\mu) = 0$, as the points $D(w)$ and $\Delta(\mu)$ respectively.²

2. Let us first obtain the locus of $P(w, \bar{w})$ as $Q(\mu, \bar{\mu})$ moves on a circle. The problem can also be formulated in the following manner. F can be considered as a pencil of quadratics, the square members of which correspond to $D(w)$. It is well known that a pencil of quadratics in the complex variable w , determines an involution of point-pairs in the Gauss plane, whose double points are the points $D(w)$. Hence the problem is equivalent to finding the locus of point-pairs of an involution, when the complex parameter of the pair traces a circle.

By a suitable linear transformations of w and μ , F can be reduced to the canonical form

$$Z^2 - \lambda = 0,$$

for if α, β be the roots of $D(w) = 0$,

$$a_{21} w^2 + a_{11} w + a_{01} \equiv A_1 (w - \alpha)^2 + B_1 (w - \beta)^2$$

$$a_{20} w^2 + a_{10} w + a_{00} \equiv A_0 (w - \alpha)^2 + B_0 (w - \beta)^2$$

¹ I am indebted to Dr. R. Vaidyanathaswamy for suggestion, advice, and criticism in the preparation of this paper.

² For these and other covariants of the (2,1) form reference may be made to Saddler: 'The geometric interpretation of the complete system of two Double Binary (2,1) forms, *Proceedings of the Edinburgh Mathematical Society*. Vol. XLIII.

so that $F = (w - \alpha)^2 (A_1 \mu + A_0) + (w - \beta)^2 (B_1 \mu + B_0) = 0$.

$$\text{Let } Z = \frac{w - \alpha}{w - \beta}, \quad \lambda = - \frac{B_1 \mu + B_0}{A_1 \mu + A_0}$$

so that F reduces to $Z^2 - \lambda = 0$ (2)

It is obvious that for (2) the points $D(z)$ and $\Delta(\lambda)$ are identical, being in each case the origin and the point at infinity.

Since λ is a linear transform of μ , the locus of λ is also a circle, the equation of which can be taken to be

$$l \lambda \bar{\lambda} + a \lambda + \bar{a} \bar{\lambda} + b = 0.$$

where b, l are real and $bl - a \bar{a}$ does not vanish.

But $z^2 = \lambda$. Hence the locus of z is

$$l z^2 \bar{z}^2 + a z^2 + \bar{a} \bar{z}^2 + b = 0. \quad \dots (3)$$

It is a cyclic, or (2, 2) curve (*i.e.*) every minimal line of either system intersects it in two points. In the Cartesian plane it is a bi-circular quartic given by

$$l (x^2 + y^2)^2 + 2 a_1 (x^2 - y^2) - 2 a_2 xy + b = 0$$

where $a = a_1 + i a_2$.

The cyclic (3) is subrational,¹ *i.e.* it admits of one and hence an infinity of inscribed quadrangles formed by the minimal lines. This can be seen directly as follows:—Take any point $(\lambda, \bar{\lambda})$. To the minimal line λ correspond the two minimal lines z_1, z_2 of the same system and similarly to the minimal $\bar{\lambda}$ correspond the two minimal lines \bar{z}_1, \bar{z}_2 of the other system. Hence to the point $(\lambda, \bar{\lambda})$ correspond the four vertices of the quadrangle formed by the above minimal lines, which should hence lie on (3). Similarly for any point on the λ circle. Further the pairs of opposite vertices of the quadrangle (of which one is real and the other imaginary) belong to the involution defined by $D(z)$.

Since any linear transformation of z , and its conjugate carries a subrational cyclic, into a similar cyclic, we have for the general correspondence F of w and μ :—

If the μ locus is a circle, the w locus is a subrational cyclic containing the cross pair² of every pair of the involution defined by $D(w)$.

¹ The necessary and sufficient condition for this is the vanishing of the invariant

$$\begin{vmatrix} a_{22} & a_{12} & a_0 \\ a_{21} & a_{11} & a_0 \\ a_{10} & a_{10} & a_0 \end{vmatrix}$$

In this case the double-binary equation to the cyclic can be thrown in the form $f_2(z) = f_2(\bar{z})$ where f, f_2 are rational functions. *Vide* Dr. Vaidyanathaswamy's 'Algebraic (2, 2) correspondence', *Jour. Ind. Math. Soc.* Vol. XVI.

² By the cross pair of A, B is meant the other pair of points of intersection of the minimal lines through A and B .

3. Since, when the double points of an involution are given, any pair w_1, w_2 of the involution is completely determined by the position of their mid-point ν , we may take ν to be the parameter of the pair. In fact we have

$$\lambda = \frac{w_1 + w_2}{2} = \frac{\alpha - \beta}{1 - \lambda}$$

Since ν is a linear transform of λ , the locus of ν is also a circle and conversely. If the ν locus is a straight line (i.e.) a circle passing through the point at infinity the w locus also passes through the point at infinity; in other words it is a circular cubic.

Corollary. For the system of conics touching four lines it is known that the pairs of foci belong to an involution and the centre locus is a straight line.¹ Hence the locus of the foci is a circular cubic.

4. Let us consider the w loci when μ traces circles invariantly related to the points $\Delta(\mu)$. For this it is enough if we take up the simpler form F_1 , provided the results are interpreted in an invariant manner, so that they may be true even after independent linear transformations of Z and λ which carry F_1 to F .

(a) Consider as λ loci the system of circles, passing through or having as inverse points the points $\Delta(\lambda)$

They are given by

$$a\lambda + \bar{a}\bar{\lambda} = 0, \text{ or } l\lambda\bar{\lambda} + b = 0.$$

Hence the z locus is

$$az^2 + \bar{a}\bar{z}^2 = 0 \text{ or } lz^2\bar{z}^2 + b = 0.$$

The z locus breaks up into two mutually orthogonal circles, passing through or having as inverse points the points $D(z)$. Hence for the general correspondence F ,

if the μ locus is a circle passing through, or having as inverse points the points $\Delta(\mu)$, the w locus breaks up into two mutually orthogonal circles passing through or having as inverse points the points $D(w)$.

(b) Let us consider the net of circles orthogonal to a fixed circle having as inverse points the points $\Delta(\lambda)$.

It is given by

$$l\lambda\bar{\lambda} + a\bar{\lambda} + \bar{a}\lambda + b = 0.$$

where $\frac{b}{l}$ is constant.

Hence

$$lz^2\bar{z}^2 + az^2 + \bar{a}\bar{z}^2 + b = 0.$$

All these cyclics are self-inversive with respect to the two fixed circles

$$\sqrt{lz\bar{z} + b} = 0 \text{ and } \sqrt{lz\bar{z} - b} = 0.$$

It is well known² that every cyclic is self-inversive with respect to four mutually orthogonal circles, which are called the director circles of the cyclic.

¹ Grace and Young. *Algebra of Invariants*. Page 208.

² Coolidge : *Treatise on the Circle and the Sphere*, page 206, Ganguli : *Theory of Plane Curves*, page 207.

Hence to the net of circles orthogonal to a fixed circle having as inverse points the points $\Delta(\mu)$ corresponds a system of cyclics having in common two director circles, for which the points $D(w)$ are inverse points.

(c) Similarly it can be shown that

to the net of circles orthogonal to one passing through the points $\Delta(\mu)$, corresponds a system of cyclics having in common two director circles, passing through the points $D(w)$

(d) Now we have a coaxial system of circles orthogonal to one passing through, and to another having as inverse points the points $\Delta(\lambda)$; in other words it is a coaxial system whose limit-points belong to the involution defined by $\Delta(\lambda)$. Hence combining (b) and (c) we have corresponding to a coaxial system of circles having for its limit-points a pair of the involution defined by $\Delta(\mu)$, we have as w loci, a pencil of codirector subrational cyclics.

5. Here let us take the w locus to be a circle, and obtain the corresponding μ locus. The z locus being a linear transform of the w locus is also a circle, which can be taken to be

$$l z z + a \bar{z} + a \bar{z} + b = C \quad (1)$$

But $z^2 = \lambda$. Hence substituting and rationalising we have:

$$(l^2 \lambda \bar{\lambda} - a^2 \lambda - \bar{a}^2 \bar{\lambda} + b^2)^2 = 4(a\bar{a} - bl)^2 \lambda \bar{\lambda}.$$

Thus the λ locus is a cyclic. It is obvious that we get the same cyclic, if we take the circles

$$l z \bar{z} - a z - \bar{a} \bar{z} + b = 0 \quad (2)$$

$$l z \bar{z} + a z - \bar{a} \bar{z} - b = 0 \quad (3)$$

$$l z \bar{z} - a z + \bar{a} \bar{z} - b = 0 \quad (4)$$

This is as it ought to be; for since the locus of λ is a (2, 2) curve, the locus of Z should be a (4, 4) curve which in this case breaks up into four circles. It can be easily shown that (2) is the mate of (1) in the involution defined by the correspondence, and (3), (4) are imaginary circles containing the cross pair of every pair of the involution on (1) and (2).

The λ locus is a nodal cyclic with its two real foci at the points $\Delta(\lambda)$. It is well known that every cyclic has four real foci, which are obtained as the real points of intersection of the minimal lines of either system which touch it. The latter are given by the discriminants of the double-binary form, regarded as quadratics in λ and $\bar{\lambda}$ respectively. These are found to be

$$4(a\bar{a} - bl)^2 (\bar{a}b - al\lambda)^2 \lambda = 0$$

and its conjugate.

Hence the real foci are the points

$$0, \infty, \frac{\bar{a}}{l}, \frac{b}{l}, \frac{\bar{a}}{l}, \frac{b}{l}$$

Further the coincident foci $\frac{\bar{a}}{l}, \frac{b}{l}$ lies on the curve so that it is a node.

In fact the nodal point on the λ locus corresponds to the unique pair of points on the Z circle belonging to the involution, which consists of two points real, coincident, or imaginary according as (Z) the origin lies within, on or outside the Z circle.

Hence interpreting for the general correspondence we have the following:—

If the w locus is a circle, the μ locus is a nodal cyclic, with its two real foci at the points $\Delta(\mu)$. The double point is nodal, cuspidal or conjugate according as the w locus separates, passes through one of, or does not separate the points $D(w)$.

The following results analogous to those in Para 3 can be easily established:—

(a) If the w locus is a circle passing through or having as inverse points the points $D(w)$, the μ locus is a circle passing through or having as inverse points the points $\Delta(\mu)$

(b and c) If the w circle belongs to a net orthogonal to a fixed circle passing through or having as inverse points the points $D(w)$, the node of the μ cyclic lies on a fixed circle, passing through or having as inverse points the points $D(w)$

(d) Combining (b) and (c). If the w circle belongs to a coaxal system, whose limit-points form a pair of the involution defined by $D(w)$, the node of the μ cyclic is a fixed point.

Lastly, it may be observed that since the centre γ of the point pairs is only a linear transform of the parameter μ , the above results are true, as well when γ is taken instead of μ ,—the only speciality being the identity of the two quadratic covariants $\Delta(\mu)$ and $D(u)$.

Theorems on Ovals.*

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1. We shall consider a plane closed curve for which the tangent turns round continuously in the same direction and returns to itself after one complete revolution. We shall assume that no straight line cuts the curve in more than two points, and shall call such a curve an *oval*. It is known that an oval has two and only two tangents in any particular direction. Two points P, P' of the oval are *opposite points* if the tangents at P and P' are parallel. The distance between the tangents at P and P' is called the *width* of the curve at P or P' , and PP' the *diameter* at P .

We shall in what follows assume that there exists a circle of curvature at each point of the oval, and that the radius of curvature ρ has a derivative. A point of the curve at which the curvature $k (= 1/\rho)$ is an extremum is called a *vertex* of the oval. At such a point, the circle of curvature has four points in common with the oval. On this account, a vertex is sometimes called a *cyclic point*. When the curvature of an oval is continuous, it is known that the oval has at least four vertices.†

2. We shall now prove.

Theorem 1. *If an oval has exactly four vertices, they cannot all lie on a circle.*

We start with the following

Lemma : If \mathbf{r} is the position vector to a point P on the oval C , and k the curvature at the point,

$$\int_C (\mathbf{r}^2 + \mathbf{a} \cdot \mathbf{r} + b) dk = 0,$$

where the integral is taken round the entire curve C , \mathbf{a} is an arbitrary constant vector and b an arbitrary constant.

This equation is really equivalent to the following three :

$$\int_C dk = 0, \quad \int_C \mathbf{a} \cdot \mathbf{r} dk = 0, \quad \text{and} \quad \int_C \mathbf{r}^2 dk = 0, \quad (1)$$

The first equation follows from the fact that the curve C is closed and the curvature returns to its original value. To prove the others, we shall use the Frenet-Serret formulae for a plane curve, viz.,

$$\frac{d\mathbf{r}}{ds} = \mathbf{t}, \quad \frac{d\mathbf{t}}{ds} = k \mathbf{n}, \quad \frac{d\mathbf{n}}{ds} = -k \mathbf{t}, \quad \dots \quad (2)$$

* I am extremely thankful to Mr. A. Narasinga Rao for suggestion and advice in the preparation of this paper.

† Mukhopadhyaya: *Bull. Calcutta Math. Soc.*, Vol., 1909; and Blaschke *Vorlesungen über Differentialgeometrie*, Vol. 1 p. 31 (1933).

where \mathbf{t} and \mathbf{n} denote unit vectors along the tangent and normal at the point P , and ds is an element of the arc, i.e.,

$$d\mathbf{n} = -k \mathbf{t} ds = -k d\mathbf{r}, \text{ and } \mathbf{n} \cdot d\mathbf{r} = \mathbf{n} \cdot \mathbf{t} ds = 0 \quad \dots \quad (3)$$

Hence on integrating by parts, we have

$$\int_C \mathbf{a} \cdot \mathbf{r} dk = [\mathbf{a} \cdot \mathbf{r}]_C - \int_C k \mathbf{a} \cdot d\mathbf{r} = - \int_C \mathbf{a} \cdot k d\mathbf{r},$$

since k and $\mathbf{a} \cdot \mathbf{r}$ return to the same values after \mathbf{r} describes the whole curve C ,

$$= - \int_C \mathbf{a} \cdot d\mathbf{n} = [\mathbf{a} \cdot \mathbf{n}]_C = 0.$$

Similarly,
$$\int_C \mathbf{r}^2 dk = -2 \int_C k \mathbf{r} \cdot d\mathbf{r} = 2 \int_C \mathbf{r} \cdot d\mathbf{n}$$

$$= -2 \int_C \mathbf{n} \cdot d\mathbf{r} = 0 \quad \text{by (3).}$$

Let us now suppose that the four vertices of the oval C are P, Q, R and S . If possible, let P, Q, R, S lie on a circle whose centre is O and radius d .

If \mathbf{c} is the position vector of O , the equation of the circle $PQR S$ is

$$(\mathbf{r} - \mathbf{c})^2 - d^2 = \mathbf{r}^2 - 2 \mathbf{r} \cdot \mathbf{c} + \mathbf{c}^2 - d^2 = 0 \quad \dots \quad (4)$$

The quantity $\mathbf{r}^2 - 2 \mathbf{r} \cdot \mathbf{c} + \mathbf{c}^2 - d^2 = (\mathbf{r} - \mathbf{c})^2 - d^2$ is positive for points outside the circle and negative for points inside it. Hence when \mathbf{r} denotes the position vector of a point on the oval, $(\mathbf{r} - \mathbf{c})^2 - d^2$ changes sign only at a common point of the oval and the circle $PQR S$ i.e. only at P, Q, R and S , since the a circle cannot have more than four common points with an oval which has only four vertices.* Also since P, Q, R, S are the vertices of the oval, $\frac{dk}{ds}$ change sign only at each of the vertices. Therefore

the product $\left\{ (\mathbf{r} - \mathbf{c})^2 - d^2 \right\} \frac{dk}{ds}$ keeps the same sign for all points on

the oval, and the integral $\int_C \left(\mathbf{r}^2 - 2 \mathbf{r} \cdot \mathbf{c} + \mathbf{c}^2 - d^2 \right) \frac{dk}{ds}$ cannot vanish. But this contradicts our Lemma when $\mathbf{a} = -2 \mathbf{c}$ and $b = \mathbf{c}^2 - d^2$.

Thus if an oval has exactly four vertices they can never lie on a circle.

In fact, it can be proved in the same way that if an oval has exactly n vertices, these cannot all be concyclic.

* Blaschke ; *Vorlesungen über Differentialgeometrie* Bd. 1 p. 49 Ex. 21, (1931).

3. *Theorem 2. The medial locus i.e., the locus of the midpoints of the diameters of an oval is a closed curve. The tangent at any point Q of the medial is parallel to the tangents at the extremities P, P' of the diameter which is bisected at Q. The radius of curvature of the medial at Q is equal to half the difference of the radii of curvature at P and P'.*

Let \mathbf{t} and \mathbf{n} be the unit tangent and normal vectors at a point P whose position vector is \mathbf{r} . The corresponding letters with the addition of a prime shall be taken to refer to the opposite point P'.

The tangents at P and P' being parallel, $\mathbf{t}' = -\mathbf{t}$,

$$\text{Also} \quad \mathbf{r}' = \mathbf{r} + \mu \mathbf{n} + \lambda \mathbf{t}, \quad \dots \quad (5)$$

where μ is the width of the curve at P or P'. Differentiating with respect to s

$$\frac{d\mathbf{r}'}{ds} = \frac{d\mathbf{r}}{ds} + \mu \frac{d\mathbf{n}}{ds} + \lambda \frac{d\mathbf{t}}{ds} + \mathbf{n} \frac{d\mu}{ds} + \mathbf{t} \frac{d\lambda}{ds}$$

Using the formulae (2) above, we have

$$\frac{d\mathbf{r}'}{ds} = \mathbf{t} \left(1 - k\mu + \frac{d\lambda}{ds} \right) + \mathbf{n} \left(k\lambda + \frac{d\mu}{ds} \right),$$

where $k = 1/\rho$ is the curvature of the oval at P.

$$\text{Since} \quad \frac{d\mathbf{r}'}{ds} = \frac{d\mathbf{r}'}{ds'} \cdot \frac{ds'}{ds} = \mathbf{t}' \cdot \frac{ds'}{ds} = -\mathbf{t} \frac{ds'}{ds}$$

$$= -\mathbf{t} \frac{ds'}{ds} = -\mathbf{t} \left(1 - k\mu + \frac{d\lambda}{ds} \right) + \mathbf{n} \left(k\lambda + \frac{d\mu}{ds} \right)$$

$$\therefore -\frac{ds'}{ds} = 1 - k\mu + \frac{d\lambda}{ds}, \quad \dots \quad (6)$$

$$\text{and} \quad k\lambda + \frac{d\mu}{ds} = 0. \quad \dots \quad (7)$$

If θ be the angle that the tangent at P makes with a fixed direction,

$$ds = \rho d\theta, \quad ds' = \rho' d\theta \text{ since } d\theta = d\theta'.$$

$$\therefore (\rho + \rho') d\theta = ds + ds' = k\mu ds - d\lambda \quad \text{from (6)}$$

$$\therefore \rho + \rho' = \mu - \frac{d\lambda}{d\theta} \quad \dots \quad (8)$$

Now if \mathbf{m} is the position vector of the mid point Q of the diameter PP',

$$\mathbf{m} = \frac{1}{2}(\mathbf{r} + \mathbf{r}') = \mathbf{r} + \frac{1}{2}(\mu \mathbf{n} + \lambda \mathbf{t}) \quad \text{by (5)}$$

Differentiating with respect to s , we have, as before,

$$\begin{aligned}
 2 \frac{d\mathbf{m}}{ds} &= \mathbf{t} \left(2 - \mu k + \frac{d\lambda}{ds} \right) + \mathbf{n} \left(k\lambda + \frac{d\mu}{ds} \right) \\
 &= \mathbf{t} \left(2 - \mu k + \frac{d\lambda}{ds} \right) \quad \text{by (7)} \\
 &= \mathbf{t} \left(1 - \frac{ds'}{ds} \right) \quad \text{by (6)} \\
 &= \mathbf{t} \left(1 - \frac{ds'}{d\theta} \frac{d\theta}{ds} \right) \\
 \therefore 2 \frac{d\mathbf{m}}{ds} &= \mathbf{t} \left(1 - \frac{\rho'}{\rho} \right) \quad \dots \quad (9)
 \end{aligned}$$

This shows that the tangent to the medial at Q is parallel to the tangent to the oval at P . If we take a unit tangent vector \mathbf{t}_m at Q in the same sense as \mathbf{t} , we have, if s_m be the arc of the medial,

$$\mathbf{t}_m = \frac{d\mathbf{m}}{ds_m} = \mathbf{t},$$

$$\text{and} \quad 2 \frac{d\mathbf{m}}{ds} = 2 \frac{d\mathbf{m}}{ds_m} = \frac{ds_m}{ds} = 2 \mathbf{t} \frac{ds_m}{ds}$$

Hence equation (9) becomes

$$\begin{aligned}
 2\mathbf{t} \frac{ds_m}{ds} &= \mathbf{t} \left(1 - \frac{\rho'}{\rho} \right) \\
 \therefore 2 \frac{ds_m}{ds} &= 1 - \frac{\rho'}{\rho} \quad \dots \quad (10)
 \end{aligned}$$

The tangent to the medial at Q being parallel to the tangent to the oval at P , the angle turned through by the tangent to the medial, $d\theta_m = d\theta$, and if ρ_m is the radius of the curvature of the medial at Q , we have

$$\frac{ds_m}{ds} = \frac{ds_m}{d\theta_m} \frac{d\theta}{ds} = \frac{\rho_m}{\rho}$$

and therefore, from equation (10), we have

$$\begin{aligned}
 \frac{2\rho_m}{\rho} &= 1 - \frac{\rho'}{\rho} \\
 \text{or} \quad \rho_m &= \frac{1}{2} (\rho - \rho') \quad \dots \quad (11)
 \end{aligned}$$

Now as P moves along the oval, the mid point Q of PP' describes the medial and when the tangent at P turns round in the same direction through 180° P comes to P' and P' to P . Q therefore returns to its original position. When P describes the other arc of the oval, P' describes the original arc

described by P, and Q therefore goes through the same positions as before. The medial curve is thus closed and is described twice as the point P moves round the entire oval once.

4. *Theorem 3. The necessary and sufficient condition that an oval has a centre (i.e., a point which bisects every chord through it) is that the curvatures at every pair of opposite points are equal.*

If an oval has the centre O, and any chord through O meets it in P P', the neighbourhood of the curve at P' is obtained by rotating a small arc in the neighbourhood of P through 180° about O. Hence the tangents at P and P' are parallel, and the curvatures at P, P' are equal.

The condition is also sufficient, for if in equation (9) we put $\rho = \rho'$,

$$\frac{d\mathbf{m}}{ds} = 0,$$

i.e., \mathbf{m} is a constant vector.

All the diameters of the oval pass through and are bisected at the fixed point \mathbf{m} , which is therefore the centre of the curve.

5. If a curve is of constant breadth, μ is constant, and from (7) it follows that $\lambda = 0$. Hence from (8),

$$\rho + \rho' = \mu, \text{ a constant}$$

If in addition the curve has a centre, $\rho = \rho'$, according to Theorem (3) and therefore

$$\rho = \rho' = \frac{\mu}{2}$$

Hence.

if a curve of constant breadth has a centre, it is necessarily a circle.

Anatomy of *RACHISELLUS PUNCTATUS* (ANTON).

By

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Rachisellus punctatus is a small Stylommatophorous Pulmonate, partly arboreal in habits, and easily recognised by the elongate shell with a dark red infra-peripheral band on the body whorl of the shell.

The genus *Rachisellus* was first established by Bourguignat in 1889. Dr. Thiele considered it as a sub-genus of *Ena* (Fam. Enidae), basing his conclusions on certain radular features. Gude (3) retained it as an independent genus of Enidae, considering the features of the shell. But, no anatomical investigations have been made on the genus. We have, however, a brief account of the habits of the species under the synonymy of *Rachis punctatus* by Ramanan (4). The present paper gives an account of the anatomy of the species.

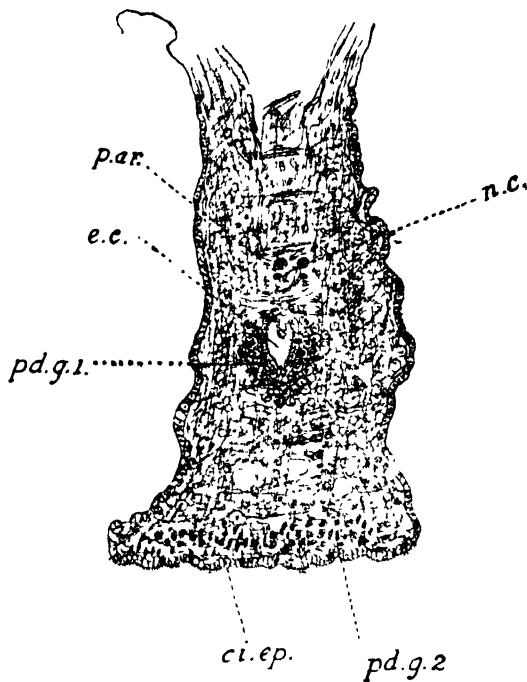
In distribution, the genus is confined to India and tropical Africa. In South India, the species has been recorded till now from Madras, Trichinopoly, Nullamalais and Travancore. I have come across this species in Chittoor, Cuddapah, Godavery and Nellore districts. The specimens for the present investigation were collected from the Madras High Court park, where they were found in the crevices in the bark of trees, chiefly of the species *Morinda tinctoria*. During the hot weather, the animals burrow into the bark of trees and remain for months in a comatose condition. After a good shower of rain they come down and can be seen crawling on grass and other vegetation on the ground.

The Animal.

The maximum measurements of the shells which I have come across are as follows:—length 15 mm. ; diameter 7 mm. ; aperture 6 mm. long and 4 mm. broad. The body of the animal consists of four and a half to five whorls and, like that of all Gastropods in general, is divisible into the head, foot and visceral mass. The head, foot and the free edge of the mantle are the only parts that are usually protruded out of the shell in the living animal. The general colour of the head and foot is light yellowish brown. The animal is somewhat semitransparent, chiefly in the anterior region, and in an animal asphyxiated in water, the position of the buccal mass, the nerve centres and the retractors of the posterior tentacles can be made out through the thin body integument. The integument on the head and the dorsal surface of the foot shows minute and thickly set tubercles. The course of the intestine and the ureter and the mantle blood vessels can be seen in the body whorl through the thickness of mantle. The kidney is seen at the apex of the body whorl towards the left, and has a light yellow colour in the living animal. The pericardium is situated immediately to the left of the kidney. The upper or the dorsal side of the remaining whorls is greyish white in colour, while the columellar side is greenish brown.

The head is not distinctly marked off from the foot. It is crescentic in section and bears the mouth and the two pairs of tentacles, the posterior of which bear the eyes and measure about 9 mm. On the right side of the head, immediately below the posterior tentacles, is situated the elliptic genital aperture. The region of the genital aperture appears blackish brown in colour, and this is due to the colour of the genital cloaca inside.

The integument over the head consists of rather short and somewhat cylindrical epithelial cells with gland cells between them. Gland cells which open on the surface are also found immediately below the epithelium. Beneath the epithelium are found connective tissue, blood spaces and transverse and longitudinal muscle fibres.

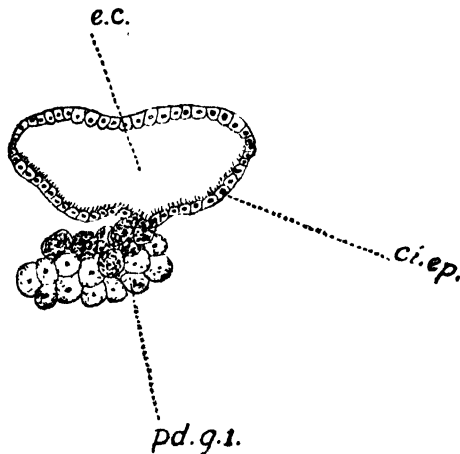


Text-fig. 1.—Vertical section through the contracted foot. ci. ep. ciliated epithelium; e. c. excretory canal of the pedal gland; n. c. pedal nerves; p. ar. pedal artery; pd. g. 1 pedal gland; p. d. g. 2 scattered gland-cells.

The foot measures about 16 to 19 mm. in the fully extended condition. It is somewhat lanceolate in shape with the broad end directed forward. When the foot is observed while the animal is in progression, a series of peristaltic contractions from behind forwards can be observed, and, as the animal moves forward, a trail of mucus, the secretion of the pedal gland, is left behind. The foot is covered by columnar epithelium, which on the ventral surface is ciliated. The main mass of the foot is muscular, being composed of three sets of muscle fibres, the vertical, or dorsoventral, the lateral, or transverse and the longitudinal.

The transverse fibres are more conspicuous in the upper part of the foot. Between the muscle fibres, there is connective tissue in which the pedal blood vessels and the pedal nerves lie.

The foot possesses two types of glands, the scattered unicellular mucous glands and the supra-pedal gland. The unicellular glands are numerous near the ventral epithelium and open on the ventral surface. The central pedal gland is about two thirds of the length of the foot. Anteriorly, it lies in the upper part of the foot and is separated from the body cavity by only a few muscle fibres, while posteriorly it comes to lie in the central part of the foot. In *Milax* the excretory canal has an investment of the gland only on the ventral surface, whereas in *Rachisellus* both the dorsal and ventral surfaces are covered by the gland. In some cases, the posterior part of the canal has only a sparse investment of the gland. A few muscle fibres and one or two blood vessels are seen in the gland.



Text-fig. 2.—Excretory canal of the pedal gland as seen when the muscles of the foot are relaxed. ci. ep. ciliated epithelium; e. c. excretory canal; pd. g. l. cells of the pedal gland.

The gland cells are irregularly round, and in the cells without secretion, the cytoplasm is finely vacuolated and the nucleus, which is round and deep-staining, is centrally placed. In the actively secreting cells, the cytoplasm is filled with deep staining secretion which obliterates the cellular details. The secretion of the cells passes into the excretory canal.

The excretory canal in the pedal gland in *Rachisellus* is simple as compared with that of *Milax*, where it is said to be branched. It is more or less surrounded by the pedal gland, especially in the anterior part. It is slightly shorter than the gland and does not extend quite to the posterior end of the gland. The ventral epithelium shows, sometimes, a slight groove in the middle and is composed of short cells with cilia at their free ends, and with prominent, basally placed round nuclei. The dorsal epithelium of the canal is non-ciliated and shows in some places a proliferation of cells looking like a typhlosole. In specimens showing this feature the canal is narrow and the foot is contracted laterally. In

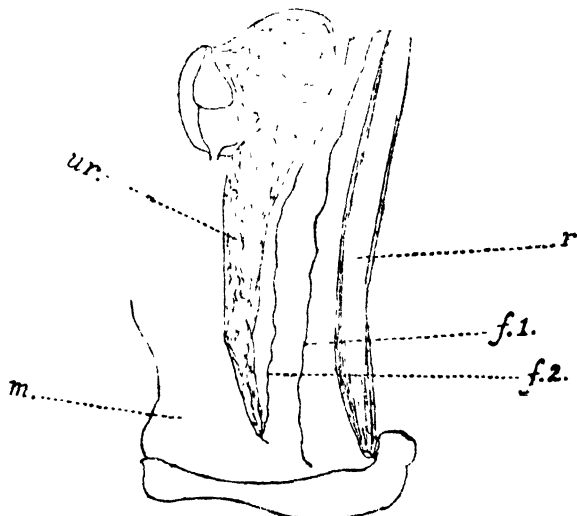
preparations in which the lateral muscles of the foot are found relaxed, the canal appears wide and without the dorsal thickening of the epithelium, which is evidently due to the contraction of the foot. No concretions were observed in the canal.

The expulsion of the mucus in the canal can be brought about not only by the action of the cilia in the canal, but also by the contraction of the foot as a whole squeezing the gland, and by the contraction of the muscle fibres among the gland cells.

The pedal artery is situated immediately dorsal to the pedal gland, and above the artery are the pedal nerves.

The Mantle and the Mantle Cavity.

The mantle shows the usual features characteristic of the terrestrial Pulmonates and forms a cloak which is fused all round with the body, leaving only a small pulmonary opening on the right side. Ventrally the mantle is attached to the foot, leaving free a narrow fringe of about 1.5 mm., while dorsally there is a wider fringe which is very thick and constitutes the mantle collar. The mantle collar is covered by ciliated columnar cells, both dorsally and ventrally, while the thickness is made of connective tissue, muscle fibres, blood spaces and large calcareous glands, often with solid secretions lying in vacuoles.



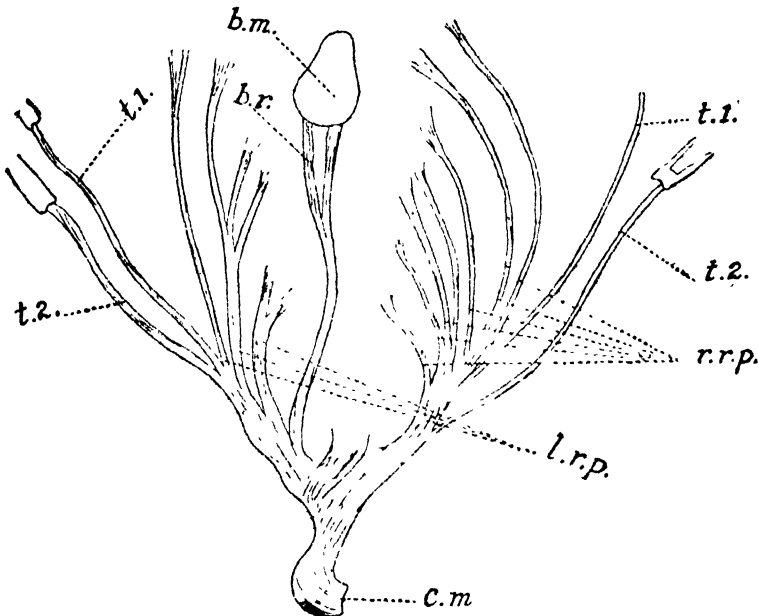
Text-Fig. 3.—The inner surface of the mantle to show the folds. f. 1. rectal fold; f. 2. renal fold; m. mantle; r. rectum; ur. ureter.

The mantle cavity contains the rectum, the ureter and a plexus of blood vessels. The renal aperture is situated about 2 mm. from the mantle margin. At the apex of the mantle cavity the pericardium and the kidney are situated. The inner epithelium of the mantle between the ureter and the rectum is thrown into two longitudinal folds. The one near the ureter starts from behind the renal opening and runs up as far as the kidney. It lies more or less parallel to the ureter

throughout its length. The one on the rectal side is wider, and starting from the mantle collar runs parallel to the rectum. The general outer surface of the mantle, is formed by somewhat columnar cells with round nuclei, while the thickness of the mantle is made of longitudinal and transverse muscle fibres and connective tissue with blood spaces and gland cells. The inner epithelium of the mantle has somewhat shorter cells. The folds between the rectum and the kidney are formed from the epithelium of the inner surface of the mantle. Each of these folds has a double layer of epithelial cells continuous with the inner epithelium of the mantle and having between the two layers connective tissue and blood spaces. The blood spaces are continuous with the venous vessels passing from the rectal sinus to the kidney along the roof of the mantle. These folds probably serve for increasing the respiratory surface, and, in vertical sections, bear a slight resemblance to the gill lamellae of an aquatic Gastropod, although they do not possess the characteristic ciliated cells.

The Muscular System.

The muscular system of *Rachisellus*, which, like those of other Pulmonates, is well developed, consists chiefly of the columellar system with the various retractors originating from it, and the muscles of the



Text-fig. 4.—The retractor muscles of *Rachisellus punctatus*. b. m. buccal mass; b. r. buccal retractor; c. m. columellar muscle; l. r. p. pedal retractors of the left side; r. r. p. retractors of the right side; t. 1, retractor of the anterior tentacle; t. 2, retractor of the posterior tentacle.

buccal mass. The intrinsic muscles of the buccal mass will be considered under the digestive system. The buccal retractor arises from the columellar system and soon divides into two sets which pass forwards through the circumoesophageal nerve ring to the ventral surface of the buccal mass, one on either side of the middle line.

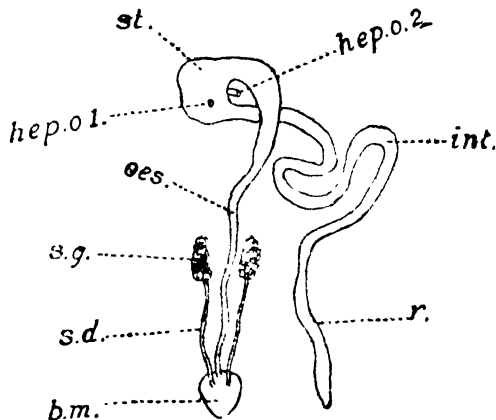
The columellar muscle is broad, shining white and spirally disposed. It extends posteriorly to the region of the stomach, where it is attached to the columella. From the columellar muscle two chief sets of muscles arise, a right and a left one. The left one gives off the buccal retractors and a little further forwards, the pedal and the tentacular retractors of the left side. The posterior tentacular retractor is thicker than the anterior and is reddish in colour. The left pedal retractors are composed mainly of five sets of muscles, two anterior, two median and one posterior. The posterior, one near its insertion, usually breaks up into two sets. The anterior retractors are attached to the lateral region of the foot. The median retractors are attached to the foot mostly above the level of the pedal ganglia. The posterior one is attached a little behind these.

The right set of retractors consists of about nine muscle strands. The outermost one, like the one on the right side, is thick and measures about 7 mm. The next one is a slender strand and is the anterior tentacular retractor. Of the remaining seven, two are anterior, four median, and one posterior.

Besides these retractors, muscle fibres from the columellar muscle pass through the mantle edge on the ventral side to the hind part of the foot.

The Alimentary Canal.

The mouth is situated at the anterior end of the head and is bounded by an upper and a lower lip. The upper lip is crescentic and has a low frilled edge. The lower lip possesses a deep groove leading into the



Text-fig. 5.—Outline diagram of the alimentary canal. b. m. buccal mass; hep. o. 1. opening of the posterior duct of the digestive gland; hep. o. 2. anterior duct of the digestive gland; int. intestine; oes. oesophagus; r. rectum; s. d. salivary duct; s. g. salivary gland; st. stomach.

oral cavity. In vertical section the mouth is T-shaped and the jaw, which is situated in the upper part of the mouth, is brown in colour and crescentic in shape. It stains feebly and shows minute and faint transverse and vertical lines.

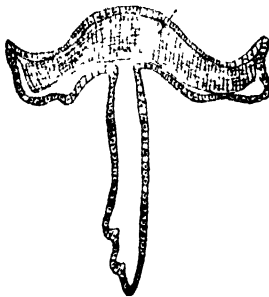
The lining of the mouth is formed by cylindrical cells with oval nuclei and interspersed flask-shaped gland cells. The gland cells are more numerous in the vertical part of the mouth. In the connective tissue above the oral cavity, a few cartilage-like connective tissue cells are found. In the oral region of the head, on either side, are found masses of mucous cells which are similar in structure to those found in the pedal gland.



Text-fig. 6.—The jaw.

The mouth leads into the buccal cavity. The buccal mass, which is oval in shape, measures about 2 mm. by 1.5 mm. and is well provided with intrinsic as well as extrinsic muscles. Arising from the anterior end of the buccal mass, from just behind the region of the jaw, are a number of slender thread-like muscles which run upwards and forwards to be attached to the dorsum of the oral region of the head. These are the protractors of the anterior part of the buccal region and some of them are median, and others, lateral. Arising from the dorsolateral aspect of the buccal mass, there is, on either side, a long slender protractor muscle which runs forwards and upwards and becomes attached to the antero-dorsal part of the cephalic region. Arising from the ventro-lateral aspect of buccal mass is a long, fairly broad muscle which runs forwards to be attached near the base of the small tentacle. Arising from either side of the middle line of the ventral surface, are three muscles which run forwards.

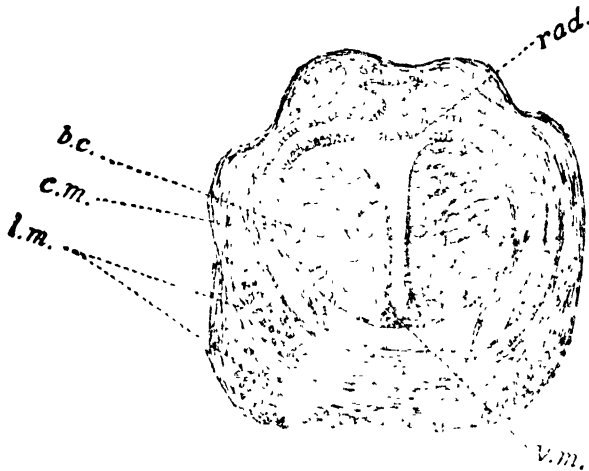
J.



Text-fig. 7.—Section through the oral region; j. jaw.

As for the intrinsic muscles, on the ventral surface are bundles of longitudinal muscles running from the hind end forward, and inside of these are circular muscles which are especially developed round the anterior part of the buccal mass. A few lateral longitudinal muscles are found to the inside of these, and in their turn overlie a few circular muscles. On the dorsal side between these muscles some connective tissue is found.

The buccal cartilages are two in number and united in front, both dorsally and ventrally. Their front ends are at a higher level than the hind ends. The cartilages are somewhat oval in outline, when viewed from above. A transverse section through the anterior part of the buccal cavity shows the buccal cartilages as a single circular mass. A little behind, the two cartilages are partly separate with a cavity between them, but are united dorsally and ventrally. A little further back they are free, both dorsally and ventrally. In the posterior part, the buccal cartilages appear pyriform in transverse section. As for the minute structure, each cartilage is composed of irregularly oval cells with non-staining cytoplasm and small roundish nuclei and distinct nucleoli. Between these cells connective tissue fibres are noticed traversing from side to side. They are abundant especially in the dorsal region of the anterior part of the cartilages. In the presence of these connective tissue fibres the buccal cartilages differ from the type usually met with in Prosobranches.



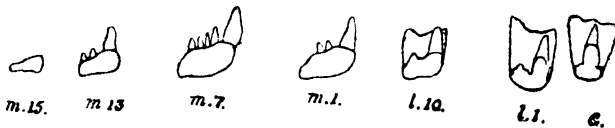
Text-fig. 8.—Section through the anterior part of the buccal mass. b, c. buccal cartilage; c. m. circular muscles; l. m. longitudinal muscles; v. m. ventral muscles connecting the cartilages.

The musculature of the buccal cartilages consists chiefly of the dorso-lateral muscles connecting the cartilages and the elastic membrane, best developed in the posterior part of the buccal mass, and the ventral muscles connecting the ventral surface of the cartilages, best seen in the anterior part. Besides these there are muscles arising ventrally and inserted on the dorso-lateral surface of each cartilage and seen in the anterior region. In the posterior region of the buccal mass, longitudinal muscles running on the inner surface of the cartilages and extending to the elastic membrane are seen.

The oral aperture, it has already been said, is T-shaped. Posteriorly, in the buccal cavity, the upper, horizontal part of it becomes short and the vertical portion also becomes short but develops lateral arms which dip down besides the buccal cartilage of either side. The buccal epithelium resembles in general the oral epithelium.

The radular sac has an investment of thin connective tissue and muscle fibres. The odontoblasts are nearly cylindrical with homogeneous cytoplasm and round nuclei.

Gude (3) states that, according to Schacko, the radula of a specimen of *Rachisellus punctatus* is reported to have the following features: "Central, tricuspid, very small; laterals, strong with a largely obliquely central plate, marginals, very abundant with seven side cusps". This description, I find to be incomplete and not corroborated by my observations. An examination of the radulae of several specimens shows the following constant features. The radula is nearly of the same width throughout and the radular formula is approximately 15. 10 or 11. 1. 10 or 11. 15. and there are about 105 transverse rows. The central is slightly small but not at all very small as described by Schacko. In fact, there is not much appreciable difference between it and the laterals. The central usually measures about 20 μ and the laterals also are very nearly of the same size. The central differs from the laterals mainly in being symmetrical and in having a more or less trapezoid basal plate which is narrower than that of the lateral. From the basal part of the plate a three-cusped projection arises, the central part being prominent and ending in pointed cusp. The lateral cusps are very slightly developed. The laterals have their basal plates irregularly or obliquely truncate in front. At their anterior edges the basal plates are pointed on one side, and the teeth possess a prominent pointed entocone and a smaller blunt ectocone. In the outermost lateral the ectocone is sometimes better developed. The marginals have a transversely elongate, and obliquely quadrate basal plate carrying a prominent entocone and usually three to five, never seven, smaller pointed cusps. The outermost marginals are very small and usually devoid of cusps.



Text-fig. 9.—Teeth of the radula, c. central; l. lateral; m. marginal.

The radula of *Rachisellus punctatus* has been said to closely resemble that of *Ena obscura* whose description is given as follows in the Fauna of India volume: "Radula leaf-like, attenuated posteriorly, bearing fifty longitudinal and 125 transverse rows of teeth; middle smaller than the laterals, with square basal plate and hooked middle cusp, which is short, conical and simple; laterals with pointed base and one or two short side cusps." As remarked above, the central in *Rachisellus* is only slightly smaller than the laterals and the basal plate is not square.

The oesophagus arises dorsally from the posterior part of the buccal mass and then descends to pass through the oesophageal nerve collar. The oesophagus in front of the nerve collar is 2 mm. and the length of the entire oesophagus is about 9 mm. As it approaches the stomach, it widens and gradually passes into the stomach. It is surrounded by connective tissue and circular muscle fibres and its inner epithelium is thrown into longitudinal folds, usually from five to eight

in number and which, in transverse section, appear as villi-like structures. The cells of the oesophageal epithelium possess short cilia-like structures of the type of rodlets. Gland cells are found between the epithelial cells.

The stomach is roughly U-shaped and thin-walled. On its ventral surface is the posterior opening of the digestive gland. The epithelium of the stomach is composed of non-ciliated cylindrical cells with numerous gland cells between them. The intestine, after leaving the stomach, takes a double loop and passing through the mantle cavity as the rectum, opens near the mantle margin. The rectal part of the intestine measures about 10 mm. The cells of the intestinal epithelium are similar to those of the oesophagus. The first part of the intestine shows a typhlosole. In the rectal part gland cells are very abundant.

The salivary glands are thin, foliate and somewhat triangular in outline. They lie on the oesophagus on the ventral and lateral aspects. The salivary ducts are long, measuring about four to five millimetres. They pass through the circumoesophageal commissure and enter the buccal mass on the dorsal surface, immediately in front of the buccal ganglia.

The salivary glands are composed of large round cells with somewhat excentric nuclei and reticular, deep-staining cytoplasm. The salivary ducts are lined inside by rather short ovoid cells.

The digestive gland is partly situated between the coils of the intestine. The gland extends from the third whorl to the apex. It may be described as consisting roughly of two lobes, an anterior one and a posterior one. The anterior lobe extends from the posterior end of the kidney to the stomach. The posterior lobe extends from the stomach to the apex of the body and invests the stomach like a cap. Each lobe consists of lobules made of the tubules of the digestive gland. There are two main ducts of the digestive gland, the posterior of which opens on the ventral surface of the stomach, while the anterior duct opens between the oesophageal and intestinal openings.

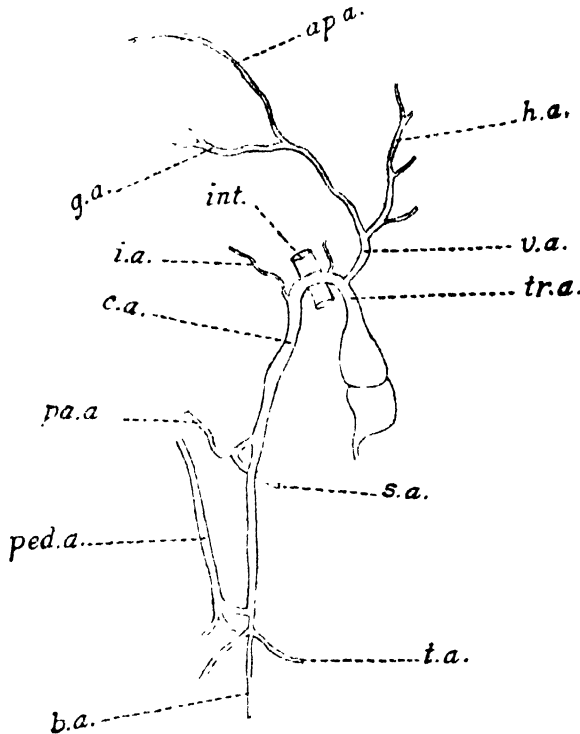
The cells of the digestive gland are of two kinds, (i) large ovoid gland cells with reticular or vacuolated cytoplasm and large round nuclei placed in the basal part (ii) and cylindrical ferment cells with granular cytoplasm and greenish brown spherical solid secretions often enclosed in vacuoles. The cylindrical cells project into the cavity of the tubule, much beyond the ovoid cells. The epithelium of the ducts of the digestive gland is folded.

The Circulatory System.

The pericardium is thin-walled and triangular in outline and measures about 2 mm. by 1.5 mm. The heart consists of a single conical ventricle and of an oblong auricle. The ventricle, as usual, possesses thick muscular walls, while the auricle has thin walls. The auriculo-ventricular opening is guarded by two semi-lunar valves which spring from the commencement of the ventricle.

The ventricle gives rise to a short truncus arteriosus which branches into the two chief arteries, the anterior, or cephalic aorta and the posterior, or, visceral aorta. At the commencement of the truncus arteriosus

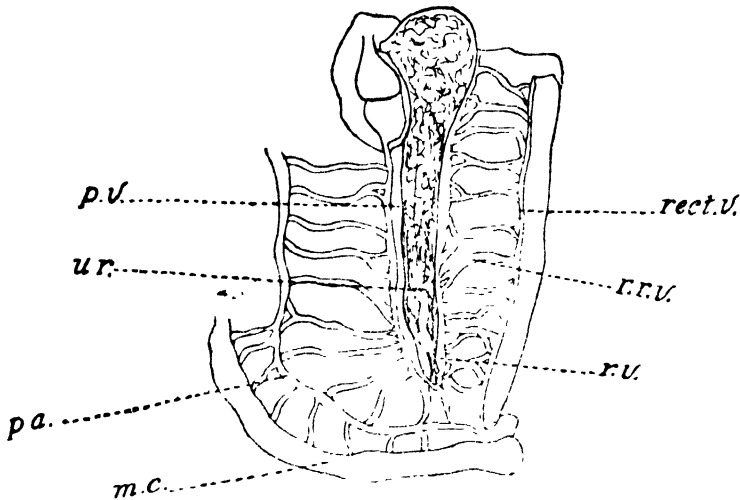
there is a valve. The visceral aorta divides into two chief branches, one of which constitutes the hepatic artery. The other branch sub-divides into two principal vessels, one of which is long and runs to the apex of the animal, supplying blood to the genital gland and the apical portion of the digestive gland, while the other branch forms the gastric artery which passes to the stomach and divides into two small arteries on its ventral surface.



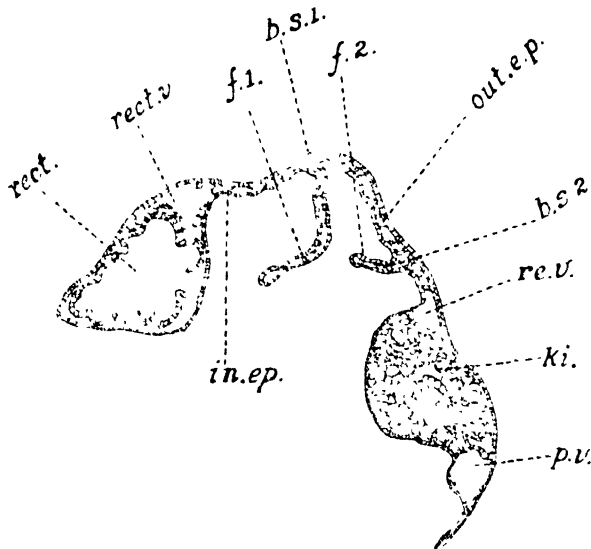
Text-fig. 10.—The chief arteries. *ap. a.* apical artery ; *b. a.* buccal artery ; *c. a.* cephalic or anterior aorta ; *g. a.* gastric artery ; *h. a.* hepatic artery ; *int.* intestine ; *i. a.* artery running on the intestine ; *pa. a.* pallial artery ; *ped. a.* pedal artery ; *s. a.* branch to the salivary glands ; *t. a.* tentacular branch ; *tr. a.* truncus arteriosus ; *v. a.* visceral or posterior aorta.

The cephalic or anterior aorta passes over the intestine and proceeds forwards to the anterior region of the body, giving off a number of smaller arteries. Immediately after passing over the intestine, it gives off a small artery which runs on the intestine. A little posterior to the region of the salivary glands, the aorta gives off a branch which sub-divides into two small arteries, one going to the salivary glands, and the other, to the mantle collar. After giving rise to these branches, the main vessel passes through the oesophageal nerve collar and branches into three chief arteries, a median one which is the buccal artery, and two lateral ones which go to the tentacles. A little behind the origin of these vessels, a ventral vessel arises and leads to the pedal artery. The pedal artery gives off two branches to the anterior part of the foot and posteriorly runs to the hind end of the foot.

The arteries are lined by flat endothelial cells with round nuclei and are invested on the outside by muscle fibres and a thick coat of large connective tissue cells.



Text-fig. 11.—Circulation in the mantle, m. c. mantle collar; p. a. vena circularis; p. v. pulmonary vein; rect. v. rectal vein; r. r. v. recto-renal vessels; r. v. renal vein; ur. ureter.



Text-fig. 12.—Section through the roof of the mantle cavity. b. s. 1, blood space in the mantle; b. s. 2, blood space in the fold of the inner epithelium of the mantle; f. 1., f. 2. folds of the inner epithelium of the mantle; in. ep. inner epithelium; ki. kidney; out. ep. outer epithelium; p. v. pulmonary vein; rect. rectum; rect. v. rectal vein; re. v. renal vein.

The venous blood collects into sinuses. The sinuses from the head and foot unite and similarly those from the viscera unite. The blood

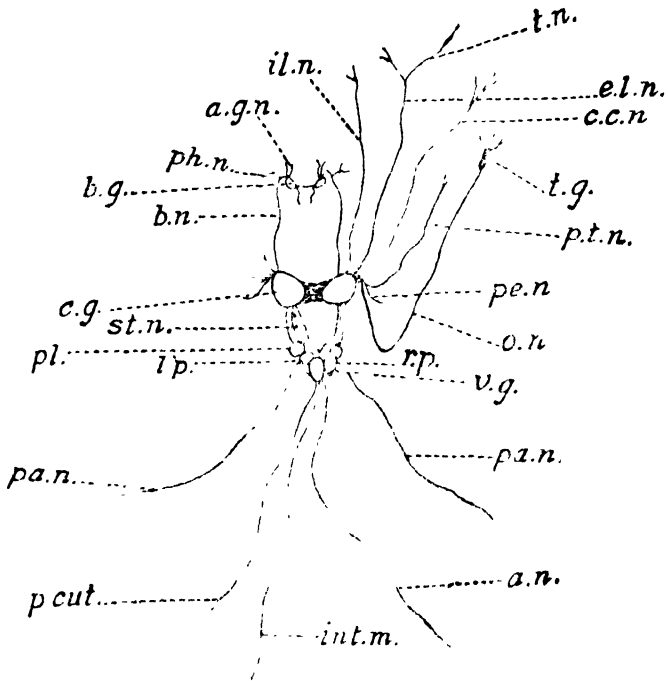
from these passes mostly into the rectal vein surrounding the rectum in the mantle cavity. From the rectal vein the blood passes into the renal vein through a number of ramifications in the roof of the mantle cavity. As has been shown already, the mantle epithelium between the rectum and the ureter shows two longitudinal folds into which also the recto-renal blood passes. From the renal vein the blood passes into the pulmonary vein which runs up to the auricle. Some of the blood from the anterior parts of the body, especially from the left side and from the mantle edge, passes into the vena circularis or "pulmonary artery". From the vena circularis, through a number of ramifications in the mantle the blood enters the pulmonary vein.

The Excretory System.

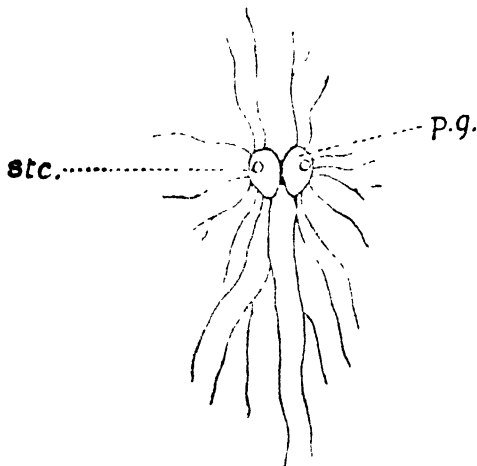
The kidney is of the usual type met with in Pulmonates. The ureter measures about 9 mm. and the glandular part is about 4 mm. The external opening of the ureter is a circular aperture situated on the rectal side, a little above the free end of the ureter.

The Nervous System.

The cerebral ganglia are broadly oval masses connected by a brownish commissure and situated over the oesophagus and the buccal retractors. Each cerebral ganglion gives off anteriorly six chief nerves. (1) The optic nerve is a stout one and arises from the antero-dorsal edge of each cerebral ganglion. It bends round the cerebral ganglion and passes along the posterior tentacular retractor to the eye. In the tentacle it enlarges into an elongate ganglion with a slight transverse constriction in the middle. From the tentacular, or optic ganglion three nerves arise and immediately divide into two each. (2) The external labial nerve arises from the ventral surface somewhat laterally, and runs forward accompanying the retractor of the anterior tentacle. Near the anterior end it slightly enlarges and gives off two branches, one of which passes to the sides of the oral region and the other branch enters the anterior tentacle and swells into a small elongate ganglion, similar to that found in the posterior tentacle. (3) The internal labial nerve arises close to the median labial nerve and somewhat ventrally to it. It is a slender nerve passing forwards to the oral region and the lower lips. (4) The cephalo-cutaneous nerve is a slender nerve which arises close to the external labial nerve; it passes forwards ventral to the genital cloaca and terminates in the integument, anterior to the posterior tentacle. (5) The external peritentacular nerve arises ventral to the optic nerve and is closely accompanied in its course by muscle fibres of the retractor of the posterior tentacle. It passes to the peripheral region of the posterior tentacle. (6) The buccal nerve is long, measuring about 2 mm. and arises from the ventral surface of the antero-lateral edge of each cerebral ganglion. The buccal ganglia are oval and are separated by a long commissure. The long axis of each buccal ganglion is antero-posteriorly directed, and from the anterior end two nerves, the anterior gastric and the primary pharyngeal nerves arise. From the hind end, the ganglion gives off a small posterior gastric nerve. The buccal nerve gives off close to the buccal ganglion the secondary pharyngeal nerve which branches into two nerves close to its origin.



Text-fig. 13.—Nervous system of *Rachisellus punctatus*. The pedal nerves are shown in a separate figure. a. n. anal nerve; a. g. n. anterior gastric nerve; b. g. buccal ganglion; b. n. buccal nerve; c. c. n. cephalo-cutaneous nerve; c. g. cerebral ganglion; e. l. n. external labial nerve; i. l. n. internal labial nerve; int. n. intestinal nerve; l. p. left pleural ganglion; o. n. optic nerve; pa. n. pallial nerve; pe. n. penial nerve; ph. n. pharyngeal nerve; pl. pleural ganglion; p. cut. cutaneo-pallial nerve; p. t. n. peritentacular nerve; pe. n. penial nerve; r. p. right parietal ganglion; st. n. nerve of the statocyst; t. g. tentacular ganglion; t. n. anterior tentacular nerve; v. g. visceral ganglion.



Text-fig. 14.—The pedal ganglion and the pedal nerves; p. g. pedal ganglion; st. c. statocyst.

Besides these nerves each cerebral ganglion gives off posteriorly a slender nerve to the statocyst and the right one gives off a short nerve to the penis. The nerve to the statocyst runs between the cerebro-pedal and cerebro-pleural connectives.

The cerebro-pleural and cerebro-pedal connectives are thick and separate. The visceral ganglion is oval and gives rise to three long nerves. One of them, the anal nerve, passes through the columellar muscle to the anal region of the mantle, accompanying the pallial artery for a part of its course. The second, the intestinal nerve, proceeds towards the posterior region of the spermoviduct near its origin from the albumen gland, and runs to the intestine. The third nerve passes under the columellar muscle and goes to the ventral part of the mantle. This is the cutaneo-pallial nerve. The right parietal ganglion is oval in shape and larger than the left, which is round. Each parietal ganglion gives off a long pallial nerve. The pleural ganglia are round in shape, and I have not seen any nerves arising from them.

The pedal ganglia are oval with their broad ends in front and are connected by a very short commissure. Each pedal ganglion gives off eight chief nerves, two from the posterior end, two from the anterior end and four from the lateral aspect. Of the two posterior pedal nerves one is dorsal and the other is ventral. The two dorsal pedal nerves of the foot lie more or less parallel to each other and run to the posterior end of the foot. Two long slender nerves arise from each nerve and run to the more ventral of the muscles of the foot. The postero-ventral nerve arises ventral to the postero-dorsal and passes down into the foot. The anterior pedal nerves are also dorsal and ventral. The dorsal nerves arise from the anterior edge, close to the upper surface of the pedal ganglia, and running forwards, divide into two branches each, one dorsal and one ventral. The antero-ventral pedal nerves arise from the ventral surface of the pedal ganglia and pass forward to the ventral muscles of the foot. The lateral nerves run to the dorsal and the ventral parts of the sides of the foot.

The statocyst lies on the dorsal surface of the pedal ganglion, nearer to the outer surface, and is innervated from the cerebral ganglion by a slender nerve.

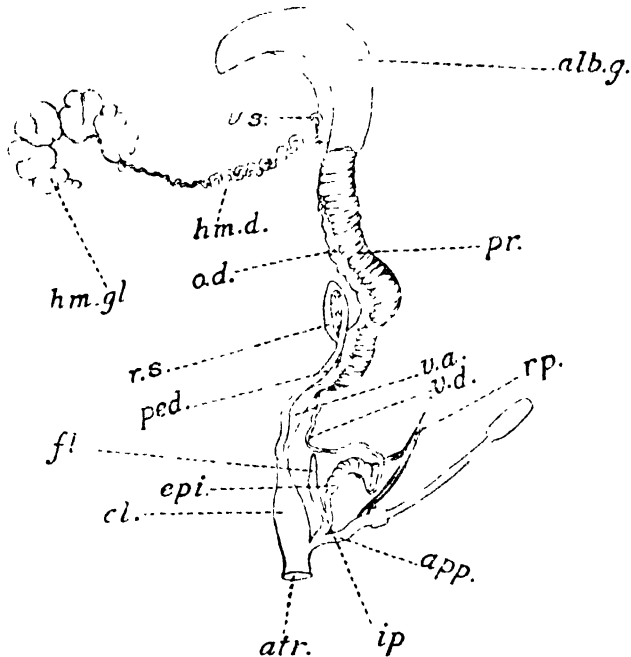
The Reproductive System.

The hermaphrodite gland is situated on the columellar side of the first and the second whorls and extends for a length of about 2 mm. It consists usually of five, more or less distinct lobes of oval acini. The number of acini in the different lobes varies. In one specimen the number of acini were as follows: I-5, II-4, III-3, IV-5, V-4.

The hermaphrodite duct is about 3 mm. long and convoluted, showing about 20 to 25 coils. The lower, or proximal part which is thicker, is more closely coiled than the upper, or distal part.

The duct reaches the albumen gland about a millimetre from its lower end. The vesicula seminalis ("poche de fecondation") is small and bent at its free end like a hook. It appears as though it were formed by the hermaphrodite duct getting doubled on itself on one side before reaching the albumen gland.

The albumen gland measures about 6 mm. in length and about 2 mm. in thickness. It is elongate and lingulate. In young specimens the gland consists of tubules of large oval cells with prominent, basally placed oval nuclei and with cytoplasm showing large spherical granules which stain deep. The spermoviduct is about 8 mm. long and has a puckered appearance. In very young specimens it is in the form of a slender tube, and as the animal grows to maturity, the walls become glandular and thick. A transverse section through the lower part of the spermoviduct is often roughly oval to semi-circular in outline and invested on the outside by circular and longitudinal muscle fibres, while the inside is lined by rather cubical cells with large, round nuclei. The epithelium lining the



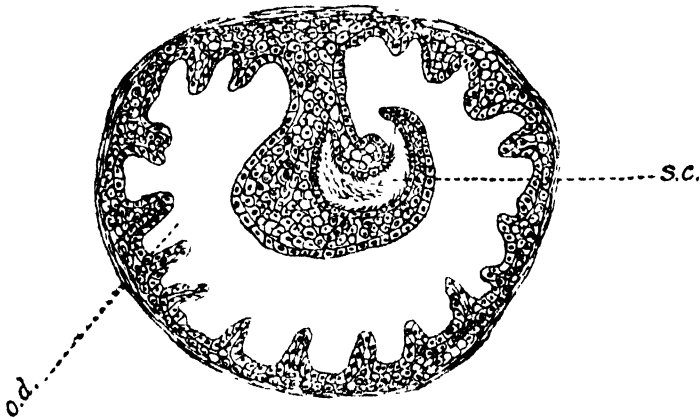
Text-fig. 15.—Genitalia of *Rachisellus punctatus*. alb. g. albumen gland; app. penial appendage; atr. genital atrium; cl. cloaca; epi. epiphallus; fl. flagellum; hm. gl. hermaphrodite gland; hm. d. hermaphrodite duct; i.p. inner branch of the penis; o.d. oviduct; pr. prostate; ped. peduncle of the receptaculum seminis; rp. penial retractor; r. s. receptaculum seminis; v. a. vagina; v. d. vas deferens; vs. vesicula seminalis.

cavity is thrown into a number of small irregular villi-like folds, in the central part of which, as well as towards their immediate outside, a large number of gland cells are present. In longitudinal section the gland cells appear oval in outline with basally placed nuclei and cytoplasm staining pink. On one side of the spermoviduct, the cubical epithelium projects into the cavity of the duct as a roughly crescentic fold directed to one side and a similar but smaller projection arises from the neck of the latter. These two folds bound the seminal canal, and as they do not unite, but leave a narrow passage between them, the seminal canal is incompletely separated from the rest of the spermoviduct which consti-

tutes the oviduct. The cells lining the seminal canal show cilia at their free ends. In some of the sections large numbers of sperms were noticed in the seminal canal.

The prostate is well developed and overlies the spermoviduct for a length of nearly 6 mm. It has a ribbon-like appearance showing transverse bands. It is lined by oval gland cells with homogeneous cytoplasm and with basally placed round nuclei. Between the distal ends of these gland cells, narrow cells with oval nuclei can be made out.

The receptaculum seminis lies against the lower part of the spermoviduct, and inclusive of the peduncle measures 4 mm., the receptaculum alone measuring about 1.5 mm. The peduncle joins the spermoviduct about a millimetre from the vestibule or cloaca. In the contracted condition it may appear to arise from the vestibule. It is usually tubular but occasionally assumes a bulbous form. The shape of the receptaculum varies from elliptic to oval. It is lined by columnar cells and is invested on the outside by circular muscle fibres. The spermatophore is club-shaped. In the lower part of the spermatheca, sometimes, large numbers of sperms are seen.



Text-fig. 16.—Transverse section through the lower part of the spermoviduct : sc. seminal canal with sperms; od. oviduct.

The vas deferens arises from the spermoviduct, a little in front of the spermatheca and measures about 4 mm. in length. The cloaca is about 4 mm. long, roughly oblong in outline and blackish brown in colour. It opens on the right side of the head as described already. About .75 mm. from its external opening, the vestibule receives the opening of the penis. This part of the reproductive system differs from that of *Ena*. Gude (3) quotes Lehmann's description of the lower part of the reproductive system of *Ena* as follows: "The penis is of peculiar shape, its lower portion being attenuated towards the cloaca and becoming dilated distally; the latter short portion divides into two branches, the one proceeding upwards at a right angle, when it suddenly becomes twisted, forming another right angle, continues in a horizontal direction, terminating in a rounded bulb. The latter receives the vas deferens. The rather long retractor muscle is attached to the lower part of the vertical portion.

The other branch at first proceeds in the same direction, then curves upwards at an obtuse angle, decreasing in size and becoming filiform, undulating, and terminating in a curved, thin, long and club-shaped flagellum". The vagina in *Ena* is said to be as long as the uterus.

In *Rachisellus* the penis is very short and shows no attenuation towards the cloacal region. It divides into two parts, one of which is outer and forms the penial appendage. Three parts can be made out in the penial appendage, a stout, proximal, or lower part, often exhibiting a collar-like appearance owing to partial retraction, a narrow tubular part and a distal, oval, flask-shaped, or sometimes, even oblong terminal part. The other inner branch of the penis proceeds upwards and divides into the flagellum and the "epiphallus" which receives the vas deferens. The relation of the epiphallus to the flagellum varies to a certain extent. In some specimens the two were observed to arise together from the inner branch of the penis, while in a few the epiphallus appeared to arise from the lower part of the flagellum. This is probably due to a partial retraction of the flagellum. The epiphallus is roughly crescentic in outline and its convex surface shows transverse ridges. One branch of the penial retractor is attached to the middle of the concave or lower surface of the 'epiphallus', while the other is attached to the penial appendage below the collar-like portion. The flagellum is simple, short and tubular and does not show any filiform undulating or club-shaped structure, as is observed to be the case in *Ena*. The wall of the cloaca, as already indicated, is blackish brown in colour. The cloaca is lined on the inside by short cells and the wall is made of irregularly round cells with very thick and well defined cell limits. The cells are vacuolated and show little cytoplasm, and the nuclei are situated near the cell limits. Muscle fibres are seen between the cells.

It will be seen from this account that the reproductive system of *Rachisellus* differs from that of *Ena*.

Conclusion.

Rachisellus shows the typical features characteristic of *Enidae* in the presence of (1) a well developed ribbon-like prostate, (2) a well developed receptaculum seminis with a long peduncle, (3) a flagellum, an epiphallus and a long penial appendage in the male part of the reproductive system, (4) a double penial retractor (5) and in the general structure of the radula.

It deviates from the typical *Enidae* (1) in the absence of "couls-de-sac" of the hermaphrodite duct, a feature which is said to be characteristic of *Enidae*, (2) in the absence of a diverticulum of the receptaculum seminis, which is present in many specimens of *Enidae* (3) and in the complete reduction of the lateral cusps of the central tooth of the radula. This tendency is, however, seen in the family as a whole. In the first two features *Rachisellus* resembles *Pachnodus*, which, however, has a different radular structure.

As pointed already, the systematic position of *Rachisellus* has undergone changes more than once. For sometime it was relegated to

the synonymy of *Rachis*. Owing to its radular resemblances, it was made a sub-genus of *Ena*. "The Achatinoid aspect" of its shell was considered by Gude (3) a sufficient case for retaining it as a separate genus. The study of the anatomy has shown that the resemblance to *Ena* is only general and not sufficient to warrant its being made a sub-genus of *Ena*. The central tooth of *Rachisellus* differing only slightly in size from the laterals, and having a trapezoid basal plate, the presence of an epiphallus, besides a flagellum and a penial appendage in the reproductive system, and the relative lengths of the 'uterus' and the 'vagina' are important features distinguishing *Rachisellus* from *Ena*.

In conclusion I have to express my best thanks to Dr. Baini Prashad for some of the references, to Dr. H. S. Rao for the verification of the species and references and to Dr. Steenberg of Copenhagen for sending me some of his papers.

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Kerala Theatre

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That little tract of land in the south-west corner of India which lies snug and secure in the fond embrace of the mighty arms of the *Malaya Parvata* on the one side and the *Pāścima Pārīdhi* on the other, is a unique little area, probably the most self-centred, self-contained in the whole range of this vast peninsula. The creation and the colonisation of this area are, according to local tradition, ascribed to that great Brahmin warrior and inveterate hater of monarchy, Sri Paraśurāma. This tradition, when subjected to a historical scrutiny, can mean only that it was this intrepid warrior who discovered Kerala to the Aryans and introduced into it the Aryan culture and civilisation; and quite consistent with this, our local traditions make him the sole organiser of our *grāmams*,¹ the primeval founder of our temples, the great systematiser of our rituals, *Vedic* and *Tāntric* and *Māntric*, and the earliest architect of our social, religious, and political *Dharma*. The beginnings of the Aryanisation of our culture may go back to a hoary antiquity. True, indeed, we cannot trace its first beginnings and subsequent developments from that remote, dim, shadowy past, through the vast sweep of centuries, but available records and traditions show that, since the dawn of the Christian Era, our culture and civilisation never underwent any convulsions violent enough to bring about any complete metamorphosis. Thanks to her isolated situation and the abundant security that a benign nature conferred upon her, she was never a prey to the ruthless foreign invader, who in the words of the late lamented Prof. Sir William Ridgeway, 'wherever they went changed the aspects of the lands they conquered and into which they introduced their own laws and customs and manners!' Such is the case elsewhere in India, and especially is it so in Northern India. This does not mean, however, that Kerala was enjoying an isolated seclusion. Even at the earliest period of which we have any record—and this is pre-Christian in point of time—our fore-fathers were carrying on a very brisk trade with various countries far and near, and the modern Cranganore figures under various names as the greatest emporium of trade in the whole east, in whose spacious harbour could be seen the ships of the Phoenicians, the Egyptians, the Grecians and the Romans from the remote west, and the Malays, the Chinese and the Papuans from the Far East. But all these came not as invaders, but as peaceful traders, and consequently, while everywhere else foreign influence led to culture suppression and culture transformation, in Kerala this led only to culture stratification and culture assimilation. Naturally therefore that vigorous seedling of Aryan culture that was successfully transplanted into the indigenous culture-soil continued to flourish there in all its vigour and vitality and to live and grow into a beautiful tree with brilliant foliage and yielding

¹ A *grāmam* means a social and religious unit. It is not to be confused with a village. The whole Kerala is divided into sixty-four *grāmams*.

sweet fruits. Kerala can, therefore, boast for her culture a continuity that is scarcely less interesting than her antiquity. And when it is remembered that this culture was constantly brought into contact with a number of distinct and different cultures, one can naturally expect to find here cultural assimilation and cultural superimposition, resulting in a new synthesis of conflicting civilisations. These three facts—antiquity, continuity and culture-synthesis—lend to the study of this culture more than a passing interest and importance. Add to this also the existence of a large number of 'genuine primitive survivals' in almost every aspect of our social, religious and political life and one may without exaggeration assert that our cultural antiquities open up a field of inquiry at once interesting and important not merely to a particular section of scientific students but to all alike—to the student of archæology and anthropology, to the student of art and architecture, to the student of religion and philosophy.

One aspect in which this wide and varied culture has found expression is the subject of the present study—I mean the stage. The Kerala Stage has made its own valuable contribution to the sum of Indian culture. The orthodox section of this stage which has a religious atmosphere attached to it and is, therefore, beyond the gaze of profane eyes, plays no inconsiderable role in helping the reconstruction of the ancient Sanskrit stage,—the active traditions of which have died out elsewhere in India—and in assisting the elucidation of one of the outstanding problems of Sanskrit Literature of the day—I mean the well-known Bhasa problem which has been generally misunderstood on account of the dearth of information regarding our stage practice. No less important is the vernacular section in which beginnings may be found revealed of the art of dramatic representation, beginnings probably primitive in character, but none the less interesting for that. Besides, the development of the stage raised the local spoken dialect to the status of a literary language. And the two together present to us a complete picture of our national tastes and cultural temperaments. It would be proper to mention here that the term stage or theatre is used in a very wide sense as embracing within it all kinds of spectacular entertainments which are characterised by the appearance in public of one or more persons in costume for the purpose of entertaining the audience and which have some literature connected with it.

II. INTRODUCTION

(a) *General Features.*—In the sense in which the term stage or theatre is here understood, its most outstanding characteristic seems to be the wealth and variety of its forms. The aim of all spectacular, or more correctly, dramatic entertainments is mainly two-fold: to impart instruction and to afford pleasure. The theatre is possibly the surest and certainly the most obvious way of educating the masses. It is again a very powerful instrument of social reform and, no doubt, in olden days it discharged this function as satisfactorily as the press and the platform do in modern days. Besides, in those times the propagation and popularisation of religion constituted one of the main functions of the theatre. And lastly it provides inexhaustible source of delight. According then

as the object of the dramatist differs, so does the nature of the play. Didactic plays are generally careful of their story, and this, so far as we now can say, has been true of all Sanskrit dramas. Those intended to reform society teem with wit and humour. Religious plays are either allegorical or clothed in an atmosphere of super-naturalism. Proper acting with due regard to naturalness of representation, and dress, music and scenic effect can be met with only in such dramatic works as have pleasure for their main aim. This variety of aims accounts to no little extent for the variety in our spectacular entertainments. We have thus entertainments which have predominantly an educative value, a religious value or an æsthetic value. Thus the Sanskrit section of our theatre has served most effectively to popularise the Hindu religion and philosophy, and with it the language in which they have found expression. It also developed a keen sense of literary appreciation and produced a number of literary works and commentaries which, both in quality and quantity occupy a high position in Sanskrit Letters. Similarly, the vernacular section has by its contribution developed a spoken dialect into a literary language. And it is not too much to say that our stage has got its eloquent appeal to make to the students of literature, both Sanskrit and Malayalam. And furthermore, it can claim an unbroken continuity through the vast sweep of at least a thousand years. On account then of these facts, our theatre becomes an important source of study to all those who aspire to a knowledge of our ancient culture.

Another feature of the Kerala theatre, probably the most outstanding one, which to a great extent distinguishes it from the Tamil, the Telugu, the Kannada or the English stage, as now known, is the prominence it assigns to actual acting and dancing. Such terms as *Nāṭaka* *Nāṭya* lend weight and authoritativeness to this practice of our stage; for these are suggestive enough of the place that has to be assigned to acting in the presentation of a Sanskrit drama, which is as it were the well-spring of all our indigenous types of vernacular entertainments. The venerable sage Bharata may also be mentioned in this connection in view of the fact that he devotes a large section of his work to the scientific exposition of the art of acting. It is not an exaggeration to say that the numerous dancing postures described by him can find living examples in the wonderfully artistic poses constantly exhibited even to-day by Kerala actors. In view of this, in according to acting and dancing their proper pre-eminence, our theatre is but keeping truer and nearer to the ideals of the ancient Hindu stage tradition.

The third equally important and prominent feature of our theatre is the use, almost exclusive use, of the gesture language of a highly codified and systematised character. This is so prominent a feature that in some varieties this, and not any spoken language, is the only means of expression. The codified gestures which are used as a means of conveying ideas in the various types of entertainments may well be classified under the three heads of: (1) *Natural Gestures*, such as are unconsciously produced and utilised, when the speaker is moved by great emotion or passion; under this head may be included such gestures as those used for denoting *come, go, eat, etc.*, (2) *Imitative Gestures* which reproduce the shape or some striking peculiarity of the thing or person or being;

such for instance as those referring to *lion, elephant, tiger, fish, tortoise*, etc. (3) *Gestures* resulting from the amplification for secular purposes of the orthodox types of *Tāntric* and *Māntric* symbols such as those used for *Ārādhana, Abhaya, Dāna, Āvāhana*, etc. The original ritualistic symbols must have been amplified for the use of the *Cākyārs* in staging Sanskrit Dramas, and thence it must have been extended to the secular varieties. These three varieties which consist of primitive instinctive gesticulations and natural and symbolic representations lend themselves to all sorts of permutations and combinations, and these, when combined and systematised, constitute the code of gesture language. (See Plate I : Some typical *Mudrās*).

It may here be mentioned that even the *Māntric* and *Tāntric* symbols must originally have been elaborated from the simple natural and imitative gestures. It is, therefore, not far fetched to assume that the *Tāntric* and *Māntric* symbols must have served as the basis of the gesture language of the stage, later developed by the addition of the imitative and instinctive gestures. And so far at least as the Sanskrit stage is concerned, this gesture language must have been introduced with a view to popularising the sacred language also. It appears, besides, to have served another practical purpose. An orthodox code requires that Brahmins should not use the profane vernacular during the course of their daily rituals; at the same time it is practically impossible for them to avoid communication with the *Ambalavāsīs*.¹ Sanskrit could not serve this purpose and the *Nampūtiris* (Kerala Brahmins) might have developed a simple code of gesture-language.

Whatever might have been the motive, this device served as an excellent method for helping the illiterate crowd to understand the language of the play and appreciate it better. That this must have been the original motive is also clear from the fact that the code of gestures used by the *Cākyārs* is far simpler than that used by the actors of the *Kathakalī*. For, in the former the actor has to confine himself to the space between the elbows of his outspread arms, while for the latter the whole space between his extended reach is at his disposal. The larger space available makes the *Kathakalī* gestures more graceful and understandable probably so designed to make the code appeal even to the larger crowd of illiterate audiences. The use of gesture-language as a means of communication appears to be very old, older than even *Kūttu*. In its beginnings, the code must have been very simple and natural and hence easily understandable, and it later became codified and stereotyped as the actors' language. This is a subject that deserves to be studied in detail.

These then, namely, the abundance of variety, the prominence given to acting and the use of a codified gesture language constitute the peculiar features of our stage, both Sanskrit and Vernacular.

(b) *Classification*.—Almost all the varieties of our spectacular entertainments are characterised by a religious atmosphere, in some cases intrinsic and in others extrinsic, which may be made the basis of

¹ The Ambalavāsīs constitute the intermediate caste between the Nampūtiris and the Nairs, and their main profession is temple work. The Cākyārs are Ambalavāsīs.

classification : thus we have the purely religious, the semi-religious and the secular types. Under the religious head may be mentioned (i) *Bhagavati pāṭṭu*, (ii) *Tiyyāṭṭu*, (iii) *Pāna*, (iv) *Pāṭṭu*, (v) *Kaṇṇiyār Kālī* and (vi) *Mutiyēttu*. Under the purely secular variety may be mentioned (i) *Eḷāmuttipurappāṭu*, (ii) *Tullāl*, (iii) *Korattiyāṭṭam*, (iv) *Mohiniyāṭṭam*, (v) *Kayyukottikkālī*, (vi) *Pāthakam* and (vii) *Kathakālī*. Under the religious head may be placed (i) *Sanghakkālī*, (ii) *Kūttu* and (iii) *Kṛṣṇāṭṭam*.

Such a classification holds good so far as the language also is concerned : the first two varieties are purely in the local vernacular, while the last, I mean the semi-religious variety, is mainly Sanskrit. They are also capable of a classification from the prominence of one or other of the elements of acting, dancing and music. In *Kathakālī* and *Kūttu* proper acting occupies the most important place ; in *Korattiyāṭṭam* and *Mohiniyāṭṭam* dancing takes the place of importance, while in *Kayyukottikkālī* we have practically only vocal music and a very simple kind of dance.

(c) *Conditions of Staging*.—Restrictions imposed upon the actors or acting are very few indeed, except in the case of *Kūttu* and *Kṛṣṇāṭṭam*, and all of them dispense with the necessity for an elaborate stage. Any open space with a small temporary shed used to serve as a stage, and a coloured piece of cloth to serve as a curtain constitute the essential stage accessories. Lighting effect is never attended to, and, as a general rule, there will be but a single big brass lamp, about three feet high with wicks placed on either side. It is also not allowed to spice the representation with any sort of instrumental music. All the music available is what is produced on *Asura Vādyas* and what is supplied by the vocal music of the actors or the singers themselves. The absolutely primitive nature of the accompaniments and the accessories is a sure indication of the necessarily great share of work that the actors themselves have to discharge to win popular appreciation and approval ; and it is no small credit to their superb acting that many of these varieties do cater even today to the recreation and pleasure not merely of the rustic crowd but also of the enlightened.

III. RELIGIOUS VARIETY

The six varieties of *Bhagavati Pāṭṭu*, *Tiyyāṭṭu*, *Pāna*, *Pāṭṭu*, *Kaṇṇiyār Kālī*, and *Mutiyēttu* have been characterised as religious, for the simple reason that they are invariably found celebrated in Bhagavati shrines in honour of the goddess, sometimes as an annual festival conducted by the temple itself and at other times as a votive offering by the pious villagers in the temple or in their homes. These are intended to glorify the Bhagavati cult and deal exclusively with the glorification and thus the popularisation of that cult which, by the way, is one of the theistic Hindu cults most popular in our parts. They have again for their main theme the destruction of *Dārika* by *Kālī* or the Victory of *Pārvati* over *Śiva*. The language of these songs is exclusively in the local vernacular, and the actors or the dancers are generally from the lower orders of the caste Hindus. These and the fact that the lower types of *Tāntric* and *Mūntric* rituals are also found associated with some Bhagavati shrines tempt one to think that in these spectacular representations

may be found the sole surviving relics of the old type of the worship of sylvan Gods and Goddesses current amongst the indigenous native population which by culture-contact and culture-stratification were purified, ennobled and admitted into the Aryan fold.

(i) Bhagavati Pāṭṭu

Bhagavati Pāṭṭu is generally found conducted either in temples or in the houses of the Kerala Brahmins, called *Nampūtiris*. The figure of Bhagavati with heads and arms and body is drawn on the floor with coloured flour and then *Jivapraṭiṣṭha* is done. Sitting around it and playing upon some of the musical instruments the troupe of people, called *Kurups*, sing the songs glorifying the goddess. The songs continue and the story reaches the climax, when the *Komaram*¹ attached to the temple becomes possessed and begins his weird dance carrying a jingling *cilambu* in one arm and a pointed sword in the other. He explains in human accents the ideas of the Goddess, as it were, and points out how the Goddess—he uses the first person—is great and good and powerful, how she is pleased with the devotion that the people have shown but how they have failed in this one or that other respect, how she is well pleased with them with the conduct of the *Pāṭṭu* and how she will always protect them. As the process of talking goes on, the songs continue and the musical instruments go on sounding. In due course the *Komaram* quiets down and the whole function comes to a close.

(ii) Tiyyāṭṭu

Tiyyāṭṭu is similar to the above in all respects except for this difference: that when the songs reach the fifth stage the *Komaram* in his possessed fury jumps into the fire and executes some weird stepping dance. While the former type of dance can be either a family or a votive offering, this latter is always a village or a communal offering. The most important point in this so far as we are now concerned is the presence of music, to the accompaniment of which there is a sort of dancing by a character who poses as a representative of a divine being for the edification of a large audience in an open place.

(iii) Pāna

Pāna is another variety of similar dancing, and though not much different from the preceding, it is technically held to be different. Two types are prevalent: it may be an individual votive offering, in which case there is only one *Komaram* taking part in it—the *Komaram* associated with the temple in which the performance is conducted. It might also be a communal or a village function; in which case all the *Komarams* of all the Bhagavati shrines in the neighbourhood must take part in it. Dressed in their usual weird habit, they conduct in unison a very queer kind of dance to the accompaniment of the instrumental music of the

¹ *Komaram*, also known as *Velicapaṭu*, is the earthly representative of the Goddess. He is selected from amongst the Nairs generally.

type called *Asuravādyas*.¹ As a third sub-variety of the same, may be mentioned another similar dance in front of a Bhagavati shrine conducted by *Kaṭupottans*, a class of people included amongst the lower orders of Nairs, who become possessed under the influence of alcoholic drink. This *Paiśācika* variety, be it noted, is run as a village offering for the purpose of getting rain, when it is inordinately delayed—an evidently powerful clue as regards the Dravidian origin of these and other similar types of entertainments conducted in the name of Bhagavati.

(iv) Pāṭṭu

Not far removed from these in essentials, much less in spirit, is the variety, known as *Pāṭṭu*. It is purely a fami'ly or domestic function celebrated by rich families as a beneficent complement to such a ritual as marriage. The purely religious aspect of this consists in the invocation of the Goddess *Pārvati* on a properly, I mean tantrically, made seat, i.e. a *Pīṭha* surrounded by the various items of *Manjalā-Caraṇa*; this is then followed by the singing of songs by a particular set of *Ambalavasi* women, called *Puṣpūis*, in a sing-song tone accompanied by the sounding of a metal plate with a table knife. At the same time there stands in front of the goddess invoked a couple of ladies dressed in their religious ceremonial dress, and as the song proceeds, they become possessed and then begin a circular dance and convey the commands of the Goddess. The function begins early in the morning and with necessary intervals runs on the whole day and night. Here again we have the glorification of the Goddess, but it differs from the other kinds in that here it is a woman who becomes possessed.

(v) Kaṇiyār Kaḷi

Kaṇiyār Kaḷi is another variety of interesting performance current in the northern parts of Cochin, conducted in Bhagavati shrines. When the performance comes on, there is erected a decorated *pandal* in the temple adorned with flags and festoons. In the centre a big lighted lamp is placed, round which the players dance to set music, both instrumental and vocal, the dance being supposed to be an imitation of the dance of *Mahākālī* and *Mahākāla*. The performance generally continues for three days, the portion for each day being fixed with reference to the music. On the first day we have the *Āṇḍikūttu*; the second day we have the *Valluvon Pāṭṭu* and on the third, the *Malama Pāṭṭu*. *Āṇḍikuttu* means acting in praise of *Āṇḍavar*, i.e., Subramanya, the issue of Siva. *Valluvon Pāṭṭu* is in praise of *Valluvon* who is held to have been a saint and philosopher, and *Malama Pāṭṭu* was so called, because probably a mountain song was sung. All these songs are highly devotional in sentiment, though here and there may be found references to social incidents. The main performance is done in the temporary hall and each day has its fixed songs. After the songs and dances are over, some farcical element is introduced in which the various castes are

¹ *Asuravādyas* is the name given to the instruments such as *Cenda*, *Kombu*, *Kulal*, etc. and the music produced by them is loud and is everything that is the opposite of gentle.

represented and ridiculed for their various vices. This portion of the representation is called by the name of *Porāṭṭu*, and its main theme is humour and social satire, each player appearing in costume suitable to the character. On the final day after the songs are over, all the players together worship the Goddess enshrined in the temple and make their exit. This is again a queer kind of performance in which music, vocal and instrumental, and dancing and acting play an equally important part: but as in the varieties considered, here also the main and central point of interest is the Bhagavati, enshrined in the temple. Naturally therefore this also deals with the glorification of the Bhagavati cult. This is, however, like the *Pāna*, a group or communal celebration, where all males, children and adults, can take part, and is celebrated both as a votive offering and as a temple function.

(vi) Muṭiyettu

Unlike the varieties hitherto described stands *Muṭiyettu*, which is the most important of the representations associated with the Bhagavati Cult. This is the only variety in which two characters appear in costume, the one representing *Kāḷi* and the other *Dārika*. The term itself is significant in that it means the *Yettal* (wearing) of the *Muṭi* (the crown) of *Kāḷi*. A critical study of these various religious varieties tempts one to associate the origins of dramatic representation with religious music accompanied by spontaneous gestures and then music with dancing. Since the figure drawn combines in itself both pictorial and sculptorial representation herein may also be seen the beginnings of painting and sculpture. This then forms an important variety which deserves to be more closely studied.

As before this again is celebrated in Bhagavati temples and is conducted by a subsection of Ambalavasis, called Kurups, who combine in themselves the arts of music and painting, acting and dancing. They arrive early in the afternoon, and in a conspicuous place in the temple front prepare a relief-painting of the Goddess *Kāḷi* in her most terrific aspect. Simultaneously with the evening rites in the temple, they begin to entertain the people with their music, vocal and instrumental. When the evening rites and ceremonies of the temple are over, the idol of the goddess is taken out in procession and after a fixed number of circum-ambulations in the precincts of the temple it is kept in a prominent place. The first item in the representation is a meeting between Śiva and Nārada, when the latter informs him that the earth is groaning under the oppression of *Dārika* and it closes with Siva's promise of his destruction by *Kāḷi*. In the meanwhile the two characters who impersonate *Kāḷi* and *Dārika* and are dressed in costume are ready to appear and at the appointed hour *Dārika* comes out and challenges *Kāḷi*. The challenge is accepted, and *Kāḷi* rushes in. There is no fixed stage—the whole temple area forms the stage and the characters walk about in a moving fight. Here is a long, tedious process of acting a battle between the two, and ultimately the goddess wins killing *Dārika*. The last act is an imposing scene and fills the audience with terror, occurring as it does at day-break. The chief item of the murder scene is

when *Kāli* plunges her hands into the very bowels of *Dārika* followed by the drinking of and besmearing the body with blood, and ultimately she adorns herself with his intestines.¹

The success of the acting depends, as it necessarily must, on the superior practical skill of the actors in the matter of acting, all the more so since there is no other serious accompaniment to relieve the tedium. This representation is looked upon as a very orthodox and religious act, and so it is beyond the pale of popular criticism from the point of view of aesthetics, and one must necessarily concede that this acting is of a superior order. The costume of the characters agrees in many respects with the costume of the characters in *Kathakali*, and without committing oneself to rash statements, one may suggest that the latter may have been derived from the model of the former. Further, I incline to find in this religious representation one of the few surviving relics of the indigenous type of spectacular entertainments, and this more than anything else has tended to popularise the Bhagavati cult in Kerala.

(vii) Conclusion

The purely religious variety may be better termed the *Bhagavati Cult* variety, because in all these the glorification of the Bhagavathi is the main object. It has also been mentioned that in many of these varieties, the *Komaram* plays a very important part. He is a personage connected with almost all important Bhagavati shrines in our parts. His other name is *Veliccapātu*, and he is looked upon as the earthly representative of the Goddess and when he is 'possessed', he is generally accorded all the honours given to the deity herself. When we remember how *Komarams* used to be selected, as they are even at the present day, we may truly see in the same, a process more or less similar to what has been described by Sheppard in his Greek Tragedy: 'Since the worshipper is regarded as affecting a God by his prayer, he assumes the character of the God to influence him and he conceives the God assuming the character of the worshipper in order to be more easily influenced'. The *Komaram* identifies himself with the Goddess and thus becomes 'in fact by enthusiasm literally filled with the Goddess'. Herein is found in short a very crude kind of Goddess impersonation on the part of the worshipper. Again, as in Greece, the performance is always out of doors, the actors, musicians and the spectators all being in open air. The performance is conducted by day in some varieties, while many of them are held during night, sometimes lit up by the moonlight but always by lamps and torches. Further, the main centre of interest is not so much the representation, as the Bhagavati shrine or the figure drawn of the Goddess in relief-painting in some prominent place. Furthermore, there is absolutely no effort made at any scenic effect, while the place and time are denoted by mere words or proper gestures. Thus it will be seen that Bhagavati cult dances, music and acting are entirely a religious function and a religious act, with the requisite religious solemnity pervading the whole performance, but with this difference, namely that

¹ There is kept within the costume a pouch containing some red liquid and a long unseemly chain-like thing to represent the intestines.

the audience is bent upon enjoying it. It is also interesting to point out that the songs, the dances and rude pantomime acting—all these are hung on to a tragic story, the destruction of *Dārika* by *Kālī*. There are some interesting parallels with the Grecian representation during pan-Athenæic festivals. Thus there is the simple act of worship, broadening into a drama. There is also the process of the humanisation of Gods. And last, but not least, comes the mythological nature of the subject which hangs on to a tragic story and which has special reference to national cults and cult-acts. An intensive study of these from a comparative point of view is sure to yield some useful results which may throw some more light on the problem of the origin of theatrical representations.

In *Kālī*'s destruction of *Dārika* one is tempted to find not a nature or vegetation myth. I am inclined to associate it with Hero-worship—worshipping the hero or heroine who rescued the place from the oppression of a wicked demon. When, however, it is remembered that *Kālī* fights her battle with sword and shield and *Dārika* with sticks, it is tempting enough to search for in this the pre-historic clash between the earlier wood age and the later iron age. But this topic does not come within the province of the present subject, and I do not wish to pursue it further, except to suggest that a detailed, systematic study of the same may also help to elucidate the pre-historic culture-values of the Malayalis.

IV. SECULAR VARIETY

The importance of this variety cannot be over-estimated for its contributive value to the enrichment of Malayalam and Sanskrit Literatures. The development and popularisation of the varied types of secular entertainment have definitely contributed to the growth of Malayalam Literature and to its elevation to the status of a literary language. The more important of the types under this head are (i) *Elāmutti-purappātu*, (ii) *Tuḷḷal*, (iii) *Korattiyāṭṭam*, (iv) *Mohiniyāṭṭam*, (v) *Kayyukottikkālī*, (vi) *Pāṭhakam* and (vii) *Kāthakālī*, which represent between them all varieties of singing, dancing, and acting with the appearance in public of characters in costume. As in the case of the purely religious type there is no fixed stage, but unlike it there is always a curtain used; again unlike it, the centre of interest is the actual representation in front and not the temple or the figure of a Goddess (*vide* section III-viii). In the case of one at least of these varieties, the method of announcing the performance is singularly effective. The instrumental musician, the *Cenḍakkāran* sounds in the evening his instrument in a peculiar manner called *Keḷikoṭṭu*. This sound is generally heard within a radius of not less than two miles. Equally effective from the practical point of view is the method of advertisement. When a troupe of players come to a village they hold a free performance, called *Sevakālī*, in the village temple. This serves the double function of paying homage to the village deity and acting as a sort of advertisement, it being a common measure of encouragement given by the authorities of the temple to supply free light for the performance. A more effective way of announcing a troupe of players cannot be conceived. It deserves to be pointed out even

at the very outset that all these performances, including those already mentioned and hereafter to be mentioned, are free to all, i.e., there is no ticket system, and this is something in which our stage stands entirely apart from all other modern stages as far as we know. For the benefit of the village the richer people of the *grāmam* one after another invite the troupe to play in their houses, the expenses being paid by the inviter. A voluntary subscription is sometimes sought from landlords and other big men of the village at the spot in the course of the performance, and this is known as *Polī*, i.e., voluntary gift. Here, in this act, the rich villager discharges his part of the *noblesse-oblige* in the matter of intellectual recreation, as much as he does in the matter of supplying free education to the more unfortunate children of the village.

(i) *Elāmutti-Purappātu*

Not the least important and perhaps the most interesting from a historical point of view is what is known as *Elāmutti-Purappātu*. This is a constant source of entertainment conducted in the houses of *Ambalavāsis* generally on the occasion of certain religious domestic ceremonies. This is one condition as regards the place of acting; the only other condition attached to it is that only *Ambalavāsis* and *Nampūtiris* are allowed to take part in the performance. The nature of the performance is as follows:—A number of people, and generally each of them is a good actor in some particular character, sit round a lighted lamp after dinner. Some sort of musical instrument is sounded and one from amongst the party sings a song which is a riddle and asks another member to answer the riddle. If the person questioned fails to answer, the questioner asks him to act the part of any character with or without proper costume. Immediately he begins to act what he has been ordered. When this is over, the procedure is repeated and the part that the player is called upon to act varies from that of a drunkard to that of the love-sick Rāvaṇa pleading to Sita, care being always taken to see that each person is called upon to play only that character which he can act almost to perfection. This is a very simple form of domestic entertainment more of the nature of a farce and must no doubt have been a very interesting source of recreation.¹

The name of the variety is interesting. No woman has a place in the actual conduct of the performance, though any one of the players may well impersonate any woman character; yet the term literally means *the appearance of seven maids, or hags*, to be more literal. One is almost tempted to remember in this connection the *Sapta Kanyakas* associated with Śaivite shrines on the East coast and the "Seven Vestal Virgins of Rome". This latter part becomes historically interesting, when it is realised that the Romans had one of their colonies at the Muziris of old i.e., the modern Cranganore. But the absence of a female actor stands in the way of tracing any connection between the two. Apparently one is forced to suggest a new interpretation of the term—to take the term as a debased form of "*Elāmūrti*"—seven characters, probably suggesting the original number of players

¹ This is more or less similar to one form of the English game of 'Forfeits'.

taking part, or the impersonations to be staged. In the light of the information now available nothing further can be said about this.

(ii) Tullal

No less interesting than *Elamutti-purappātū*, but more important from a literary point of view, is the variety called *Tullal*, one of the most popular sources of recreation amongst us. This is the result of a theatrical quarrel which has enriched our vernacular literature to a very great extent. Once while a *Cākyār* was acting a drama, the *Nambiar* was playing on the musical instrument of *Milāvu* (See Plate II-i) and he worked it wrongly. The *Cākyār* got angry and administered a severe reproof to him in the course of his dramatic exposition. This public censure was too much for the young *Nambiar*, and so, as soon as the performance was over, he sat devising a new mode of performance, and, working at it the whole night, produced something new in form and spirit, though it was based on a harmonious combination of *Prabandham Kūttu* and *Pāṭhakam*, which we shall refer to later on. He also devised a new costume which was more attractive than the costume of the *Cākyār*, but at the same time more ludicrous than serious. The next day, when the *Cākyār* began his *Kūttu*, his erstwhile assistant began his new performance with the required instrumental music. This attracted the whole of the *Cākyār's* audience. Such was the origin of *Tullal*; and it retains even to-day the popularity that it had on the first day of its staging. This gifted actor-poet was the famous Kunjan Nambiar and he has made a very substantial contribution to the Malayalam Literature.

The scenic and musical equipment required in this variety of entertainment is comparatively little. The actor dresses in a costume that is peculiar, being distinct from the *Cākyār's* dress and the dress of the characters in *athakalī*. He wears a frilled skirt round his waist, with a couple of *bandha* round his arms. (See Plate II-ii) His face is painted and he wears a head-dress. There is, indeed, some difference in the costume for the different varieties of *Tullal*. The character is helped by a musician who leads the song and works on a *Maṭṭhaḷam* and another man keeps time to the song with a cymbal. The musician sings the songs which are then repeated by the actor to the accompaniment of acting and gestures and facial expression, while the instrumental music is kept up. In other words, the actor has to sing, act, gesticulate and at the same time dance—which involves some skill on the part of the actor. In this, then, may be found a harmonious combination of *Prabandham kūttu* and *Pāṭhakam*, while the use of the vernacular language, the absence of restrictions regarding place and persons acting, the presence of a character in costume, the accompaniment of instrumental and vocal music, these have made it more popular than *Kūttu* and more attractive than *Pāṭhakam*.

In addition, the gifted author of this innovation had 'a remarkable insight into the rationale of metrical effect and he therefore adopted various metres to match the variety of moods and emotions so that the spontaneity of impulse is at every turn exhibited by a suitable change in the measure, cadence and movement of the verse, and thus he leads

the way not merely in point of originality but in point of excellence in this branch of our literature.' Consequently, as he was the first, so is he the best of our *Tullal* poets.

As has already been mentioned, there are three varieties of *Tullal*, and they are known as *Oṭṭan Tullal*, *Parayan Tullal* and *Śītankan Tullal*. They differ more in the measure and cadence of language than in costume, except in the *Śītankan* where the actor adorns himself with ornaments made out of the tender leaves of the coconut tree. As has been suggested, the performances are generally in the form of ballads, sung in character. The Puranic stories supply an inexhaustible theme, but for the most part 'being fused with the colour and temper of the poet's mind' they appear as new creations. There are no curtains used and whenever the actor needs some rest, he has devised an easy method of taking it: he simply turns his back upon the audience. There is of course only one actor, and he appears generally with painted face and adorned with a head-dress which has some faint attempts at ornamentation generally in the form of a serpent hood. The actor has not merely to sing under the lead given by the singer, but he also acts, his whole body being set in motion: while his legs beat time to the song and music, he dances and his eyes and face express the sense of the songs and his arms represent the same in the code of the gesture language. Since the time of its origin, this has been a very popular type of entertainment.

(iii) Korattiyāṭṭam

Another equally popular kind of dance representation is *Korattiyāṭṭam* or Gipsy Dance. The origin of this is not very well known and I am inclined to think that it is an importation, though it has been very well assimilated to our conditions of life. Two characters, appear on the scene in the garb of ladies, impersonating the wives of Śiva and Viṣṇu, accompanied by a musician who sings the songs to the accompaniment of instrumental music while the two characters act the songs in the language of the gesture code with the requisite facial expressions and dances (see Plate III-i). These two, the consorts of Viṣṇu and Śiva, carry on an interesting dialogue regarding the respective merits and demerits of Viṣṇu and Śiva, each trying to prove that her Consort is superior to the other's. They carry on the conversation by acting and dancing and by gesture language which is made clear by the musician who sings the songs, while an assistant keeps time on his cymbal.

(iv) Mohiniyāṭṭam

Mohiniyāṭṭam, or the Siren dance, was once a very popular source of entertainment which has now practically died out. Here a lady appears in the garb of a temptress and entertains the audience with dance and music. The idea is based on the legendary story of Viṣṇu's appearing in the garb of Mohini to tempt Śiva. It is a very elegant type of recreation: but unfortunately because the women who thus appeared in public generally had low morals, it came to have some opprobrium attached to it; it is no longer a current entertainment.

(v) **Kayyukottika!**

The only other variety where women appear in public to entertain people is in what is known as *Kayyukottika!*. Here a number of grown up ladies dance round in a circle (see Plate III-ii), singing the songs in chorus under their leader and keeping time with their hands; this resembles the Japi dance of the Mundas in Chota Nagpur but for the presence of the male who works the instrumental music.¹ The English educated ladies of the present day look down on this sort of entertainment and as a result this is also sharing the fate of *Mohiniyāṭṭam*. But fortunately there has been a revival, in that this is now being used as one of the methods of physical education for girls. This is important also from the literary point of view in that it has tended to create some good literature in Malayalam. This type seems to be on the border line between dance and drama. It is interesting to point out here that this particular type of folk dance is very common during the local *Tiruvātira* festival which is supposed to be a commemoration of the destruction of Kāma, Cupid, at the hands of Śiva. Can this circular dance be taken as an instance of the use of dances to honour the dead, as was the case at Athens? ²

(vi) **Pāṭhakam**

Pāṭhakam is bi-lingual variety, semi-Sanskrit, semi-Malayalam. In form and in nature, it is closely modelled on that variety of *Kūttu* which is called *Prabandham Kūttu*, and is probably connected with it in origin also. It consists in a dramatic exposition of any incident from the Puranas, the exposition being entirely in vernacular, while the verses for recital are in Sanskrit. It entirely dispenses with any kind of stage equipment, and there are no conventions to be satisfied, except probably the presence of a lighted lamp to be kept in front of the actor. On account of its simplicity of staging, it is one of the most popular types of entertainment current in our parts.

As the term itself suggests, the actor or expositor must be very learned and must besides possess a witty tongue and shrewd powers of observation; these, in addition to a melodious voice constitute an ideal actor. The costume of the actor is very simple, though quaint. He wears a head-dress which has some faint attempts at ornamentation, though in the absence of this, any coloured piece of cloth round his head will quite suffice. His chest is generally bare, adorned with sandal paste, necklaces and other ornaments. There is nothing to mark off the stage from the audience but a lighted lamp, and there is no curtain.

When everything is ready, the actor comes, stands facing the audience and performs *Mangala*, the verse being mixed Sanskrit and Malayalam, in a voice that is scarcely audible. This is then followed by a long prose passage in which he sets forth the purposes of such dramatic expositions, the main object being religious education of the easiest and simplest type. This opening verse and the subsequent prose passage compare very favourably with the *Nāndi* and *Prarocana* of the

¹ This information is supplied by my esteemed colleague, Dr. Sen.

² Vide the Drama and Dramatic dances of non-European Races—Page 10,

Sanskrit stage. These over, he begins in the local vernacular and describes the situation where the story begins. Having thus well introduced the audience to the particular context, he recites the text which is in Sanskrit and proceeds to expound the same in vernacular with a wealth of illustrations, making adequate reference to the current social topics and not rarely to individuals. There is little of acting, but appropriate gestures are utilised to make the narration as vivid as possible. The expositor enjoys freedom of speech to a certain extent, though for fear of losing his patronage he never uses it to the same extent as the *Cākyār* does. It will be seen from what has been said that the main aim of this variety of spectacular entertainment is to impart education leavened with wit and humour.

This variety of entertainment is not far distinct from the variety of *Kūttu* called *Prabandham Kūttu*, for in both we have dramatic exposition and both serve more or less the same purpose. There are indeed some essential differences to which we shall refer later, and these would show that in *Pāṭhakam* we have *Prabandham Kūttu* in miniature. The prominence given to the local vernacular and the freedom given to the performance, the place of acting and the actor are evidently innovations introduced in the direction of simplification with a view to making it more and more popular. And well was it for our land that such a type of recreation came into existence; for, as a result of this, some of the light of Sanskrit learning illumined the minds of even the masses. From another point of view also one ought to be grateful to the originators of *Pāṭhakam*, for this has led to the creation of a number of works in Sanskrit which are locally called *Prabandhams*. In number they are over 30, and in size they may easily fill a volume of about 300 pages, while in intrinsic merit they occupy a very high place in literature. Here is a definite measure of Kerala contribution to Sanskrit Literature, but unfortunately it is as yet unknown and unjudged. It is strange that not one of these has yet been published in Devanagari script. Again the need for an expository commentary to help the *Pāṭhakakkāran* has also led to the creation of a school of literary criticism in Malabar and it also adds a definite contribution of its own to literary criticism. Thus it will be seen that *Pāṭhakam* and *Prabandham Kūttu* supplied not merely noble recreation to all alike, both the literate and illiterate but also enriched the Sanskrit Literature both by original works and valuable commentaries.

(vii) Kathakalī

Kathakalī, the most important variety of our popular stage, is not a very old type of entertainment and the circumstances of its origin are well-known. One of the well-known Zamorins of Calicut organised what has now come to be known as *Kṛṣṇāṭṭam*, modelled probably on Jayadeva's *Gītāgovinda*—a variety of our stage which we shall consider later. This became very popular as soon as it was organized, and a neighbouring chief requested the Zamorin to send the troupe to his court. But because they were political rivals, the latter refused to send the troupe and sent word that there were none at the southern court who could appreciate the play. The chief retaliated by organising another popular variety of

entertainment, then called *Rāmanāṭṭam*, which subsequently has come to be called the well-known *Kathakali* or *Āṭṭakatha*. This was organised by a chief of *Koṭṭārakkara Svarūpam*, a new type of entertainment which before long became the most important section of our local stage and which led to the creation of what constitutes the most substantial part of our vernacular literature. Thus this is one example of a political feud resulting in literary acquisition.

It is definitely known that *Kṛṣṇāṭṭam* was first staged on the date expressed in the Kali chronogram, '*Grāhyā stutirgathakaliḥ*', which, when worked out, gives the date, approximately 1657 A.D. This would show that *Kathakali* must have come into existence sometime later. We shall not be far from the truth, if we place this in the latter half of the 17th century. The same view is further borne out by the opening verse of *Ramanāṭṭam*, which runs as follows :

prāptānandaghanaśśriyaḥ priyatamā śrīrohiṇījanmanah
Vancikṣmāvaravīrakeralavibhoḥ rājnassvasussūnūnā
śiṣyeṇa pravareṇa śaṅkarakaveḥ rāmāyaṇam varṇyate
kāruṇyena kathāguṇena kavayaḥ kurvantu tatkārmayoh.

This verse suggests that the prince of *Koṭṭārakkara* who is the author of this work was a nephew of *Virakerala Varma* of *Travancore* and a disciple of *Śankarakavi*. There appears to exist a prince of this name somewhere about 1665 A.D. It is therefore quite probable that this new variety must have been devised somewhere in the sixth decade of the 17th century.

It may not be uninteresting to point out briefly the nature of *Rāmanāṭṭam*. It describes the story of *Śrī Rama*, beginning with *Daśaratha's Putrakāmeṣṭi* sacrifice and ending with the siege of *Lanka*. The costume of the characters was more or less based upon what obtained in *Kṛṣṇāṭṭam* and masks were worn. The whole play was divided into seven Acts, to be staged in seven days or a Seven Days Play, as is technically called, and was first staged in front of the *Gaṇapati* shrine at *Koṭṭārakkara*, the shrine of the family patron deity. Coming to the work itself, the language is a mixture of *Sanskrit* and *Malayalam*, the former predominating in the verses and the latter, in the *Padams*—a peculiar language feature which obtains also in the later *Kathakali*. Critics are of opinion that the work does not possess a high order of literary merit ; but however that may be, students of *Malayalam Literature* cannot afford to forget the services rendered by the prince of *Koṭṭārakkara* : for he originated the new type of spectacular entertainment which in its turn contributed a good deal to the literary status of *Malayalam*.

The legitimate and proud child of *Rāmanāṭṭam* is *Kathakali*, which we shall now proceed to notice. As is usually the case, the play is generally announced by a *Kelīkoṭṭu*, and since elaborate get-up and costume are necessary for the various characters, the more important actors get to the green-room early in the evening. As in the *Sanskrit* dramas, there is the *Pūrvaranga* which consists in the recital of a few verses followed by some specific *steppings* behind the curtain. After this the curtain is lifted and the hero and the heroine of the play

make their appearance and perform *Mangala*. This constitutes what is called *Toṭayam-purappāṭu*, and it compares very favourably in almost all essential respects with the *Purvaranga* and the *Nāṇḍi* of the Sanskrit Dramas. After this is over the play begins, the most prominent feature of which is, as we have mentioned, the use of the gesture language and the exquisite dancing and acting to the accompaniment of the music of the singer who also works on musical instruments. The play generally continues throughout the night, the more important characters appearing only towards the latter part of the night. The actors are generally Nairs, and rarely Brahmins, and they have to undergo a process of training for a period of not less than five years. The various poses, the supple dances and the clearness of facial expression, in these *Kathakali* actors appear to satisfy the highest expectations of Bharata. They have attained almost perfection in the art of acting as expounded by Bharata, as well as in the art of the proper use of paints; yet they are not slavish imitators. Though Bharata has tabooed many an item from actual representation on the stage, such for instance as duels, deaths, feasts, kissing, embracing, etc., our actors never care for these restrictions: they represent these freely as on the modern stage.

The plot of the story is generally taken from that inexhaustible storehouse of Hindu mythology, the venerable Epics. It is to be regretted that no local heroes are dramatised, even though there were indeed a number of them, at that time at least, who achieved the highest eminence on account of the coming of the Portuguese and the consequent series of battles; yet our authors have introduced many innovations and changes in the Puranic stories which are intended either to remove practical difficulties of staging or to enhance the artistic effect of acting and afford scope for the presence of almost all the most important characters. The 'literary framework' of the plays is composed of three distinct elements. The *Pādams* or verses constitute the first of these and they are mainly Sanskrit in form and language, conforming more or less to the highly artificial nature of the classical language in the introduction of the various verbal figures such as assonance, alliteration and long compounds. But unlike those in Sanskrit dramas, these verses set the story in motion and serve as connecting links to bridge over the difficulty of time and space and in this respect they fulfil the function of the Shakespearian chorus as found in the *Henry V*. The verses are always sung and very seldom acted. The second is what are called *Daṇḍakams*, long pieces of rhythmic prose in mixed Sanskrit and Malayalam which serve more or less the same purpose as the verses. The third is called *Paḍams*, which are mainly in Malayalam and form the subject for acting. They are neither in the classical metres nor in the musical Dravidian metres, but in rhythmic prose obeying certain specific laws, and guided by musical quantity and notation based on the length of syllables. They are at the same time conversational in style and use the 'emphasis of sound to strengthen the emphasis of sense'. The *Paḍams* can be divided into many kinds based upon the subject matter, such as for instance erotic pieces, challenges, self-praise, messages, laudations, etc. The first of these consists of such pieces as describe the sunset, moonrise, etc. and their effect on the impassioned hero or heroine, and these are characterised by the slow moving steps, which in

local technique are known by the term *Patinñāṭṭam*, the movement of the piece and the acting generally agreeing with the rise and development of the passion. The *Paḍams* are fully as capable of expressing emotion and as efficacious in imaginative appeal as the *ślokas* but transcend them in musical effect. They are a splendid blending of music and poetry and thus, though they are to a certain extent lacking in naturalness, they are superior to the prose or 'loosened speeches' of the dramas. In spite of this want of a certain naturalness, they do serve their purpose almost to perfection. These three, namely *Pāḍams*, *Dāṇḍakams* and *Paḍams*—constitute the literary framework of the *Kathakalī*. An examination of some of the well-known plays clearly tends to show that there are separate rescensions of the text, and this agrees with the tradition that there were originally two kinds of *Kathakalī*, the northern and southern variety, the one being popular in Northern districts of Malabar, and the other, in the South. This difference is not kept up now.

No account of this variety of our stage can be complete without a reference to the costume and get-up of the characters. When the entertainment was first devised and staged at the Gaṇapati shrine at Kottārakkara, the actors appeared in a very rudimentary costume. They did not apply paints, but instead wore masks painted over with red, dark and other pigments, and they never used any head-dress. The first change introduced in costume was by a prince of the *Vetṭat Svarūpam*: he insisted that the actors must use facial paint, wear a head-dress and cover their body with something like a coat. A few changes were also introduced in the musical accompaniments. Originally the musicians were themselves the actors, at which time the *Cenda* was not used. The introduction of this musical instrument and a singer over and above the actors constituted the innovations introduced in the matter of stage accessories. The mode of representation thus inaugurated has come to be known as the *Vetṭat Mode*. These are, indeed, changes important in their own way. For, the first of these is a very important one, in that the use of masks not only precluded all attempts at varied expression, but, necessarily tended to stereotype the passions portrayed and prevented the rapid manifestation of the change of passion'. The second set of changes, especially the introduction of a singer, enabled the actor to concentrate on the actual acting. For some time these were the only improvements effected, but later two *Nampūtiris* took up this study and by them the whole show was completely reorganised into what obtains now. One of the *Nampūtiris* belonged to the *Kaplingaṭ Mana* and the other, to the *Kallaṭikoṭu Mana* and both introduced some innovations of their own. The innovations made by the former are briefly the following: different costumes for different casts of characters, *Ālavattam* and *Veñcāmara* for the most important characters, in whom divine or regal splendour has to be emphasised; the mounting of a small ball on the tip of the nose of the *Asura* characters (See Pl. IV-i) and the application of *Cutti* for enhancing the effect of facial expression, some changes in the code of the gesture language, the nature of the various *steppings*, the painting of the face and the use of *Niṇam Aniyal*. These constituted the main innovations, and all these changes together constitute what is technically called the *Kaplingaṭ* or the *Northern Mode* of representation. The *Kallaṭikoṭu* or the *Southern*

Mode differs from the former in that it introduced some changes in the gesture language and the dancing steps, in the nature of music, Sangiti a variety of tunes, being introduced, etc. The essential difference between the two lies in the fact that while the former emphasised expressiveness of facial features and gestures, the latter brought into greater prominence dancing and dancing steps and made them aid expression. In the stage at the present day, both these modes are mingled together and as a result all the four items are adequately emphasised.

We shall now briefly notice the costume and get-up of the various characters. There are three types of characters that appear on the stage and they are (1) *Minukku*, (2) *Teppu*, and (3) *Tāti*. The second of these is again of two kinds: (a) *Pacca* and (b) *Katti*, while the third is again of three kinds: (a) *Kari* or *Karatta Tāti*, (b) *Vella Tāti* or *Velutta Tāti* and (c) *Cokanna Tāti*, which last, be it noted, is almost the most important character in almost all plays.

The first of these, i.e., *Minukku* (See Plate IV-i: the figure to the right) which literally means smoothening the face, is the simplest of the kind and consists of a simple powdering of the face with yellow and red pigment mixed together, adorned here and there with a few white dots. Black unguent is applied to the eyes and the lashes, while the white of the eyes and the lips are reddened by the application of what is called '*Cunḍappūvu*'. The forehead is sometimes adorned with a caste mark of the type called '*Gopi*'. This is generally the facial paint for the females, sages or saints and holy brahmins and minor characters.

Pacca is a slightly more elaborate form of facial paint. The facial front is painted in green, and it is given a white border about an inch in width running all round and touching the *Cuttiṇāṭa* in the forehead, which forms the base of the head-dress. The eyes and lashes and lips are dyed as before. A typical instance of this could be seen in the seated figure in Plate IV-ii. This facial painting is generally given to the hero or the *Nāyaka* of the play and such other characters as are princes and good men.

Katti (See Plate V-i.) is a still more elaborate form of facial paint, being an improvement on *Pacca*, in that there is within the bordered *Pacca* another *cutti* around the nose, while the space between this and the nose is kept red, the nose being green in colour. The red streak will be over $\frac{1}{2}$ an inch in thickness and runs up either side of the nose to the forehead and over the brows. In addition to this there will be placed just at the tip of the nose a round ball called *Cutti-puvvu* which is white in colour. This figure generally presents a fierce character and is very impressive on the stage. This is the costume prescribed for *Pratināyaka* and those having an *Asura* tinge in their blood.

Still more elaborate and fierce looking is the costume prescribed for the characters, known as *Tāti*. *Tāti* style is of three kinds: (1) *Cokanna Tāti* or the red-beard; (2) *Velutta Tāti* or the white beard; and (3) the *Kari* or *Karutta Tāti* or the black beard, (see Plate V-ii the figure on the right). This differentiation is based on the colour of the beard worn by these characters which is an indispensable part of their costume. In this the *cutti* instead of circling round the nose and spreading out into

the fore-head runs around the eyes and reaches the *Cuttināta*, the ends of which together with the central part are adorned by *Cuttiṇuvus*. The region of the eyes is painted with dark pigment. The other facial adornments are as before. A typical *Cokanna Tāṭi* is seen in Plate IV-i. This is the costume prescribed for proud and wicked characters who are bent upon doing evil things.

Such facial painting helps facial expression considerably, the colours of the paints and projections being devised with specific reference to the various *Rasas* and *Bhāvas* which predominate the various characters. *Kathakali* is eminently a play in which the stronger or wilder passions have full play. The exceeding simplicity of the female characters constitutes in itself an evident proof of the minor part they are intended to play in the actual conduct of the play. It is also significant that even the female characters (See Plate V-i and ii the second figure from the right), when they have to discharge sterner acts, do appear in a garb more or less worthy of their function. Similarly, when love is depicted, it is always the sensuous and impassioned or the wounded and disappointed type. Thus it is always the strong passions that find expression in *Kathakali* and the facial expression is such as will suit the strong, sensuous and intensified character of the passion; and naturally with a scientific eye for colour and effect, a variegated scheme has been introduced in facial paints, which agrees perfectly with the facial expression of the *Bhāvas*.

Quite consistent with the facial paint is the nature of the other items of costumes of which the most important are the head-dress, the breast-plate, the *Uttariyam* and the skirt. There are two types of head-dress which are technically known as *Keśabhāram kiritam* and *Muṭi*. The first of these consists of a coronet surmounted by a circular disc. It is generally of two different types—a distinction based mainly on the size of the circular disc. The bigger one is generally used by confirmed-wicked characters (see Pl. IV-i the figure to the left) who are ferocious and have some sort of regal splendour, while the smaller kind is used by the other characters. Both these kinds of head-dress are used only by the male characters. The other variety of head-dress called *Muṭi* (See Plate IV-i the figure to the right) which corresponds to the coronet of hair of the sages and saints or the simple crown of kings, is generally worn by characters of a saintly disposition, sages and divine agents or allies, such as Hanuman, Nandikeśvara, etc. The head-dress worn by Śrī Kṛṣṇa and Śrī Rama are generally *Muṭi* adorned, however, with peacock feathers, instead of a spherical crown. At the base of the head-dress is tied what is called the *Cuttiṇāṭa* (see Plate IV-ii seated figure: the white line above the eyes) which forms as it were, the base from which springs the crown or coronet and which forms the white border completing the facial tattooing described before. The ears are adorned with two ornaments: *Kuṇḍalams*, a convex circular wooden disc adorned with paints and hanging down, for the lower portion, and *cevikkuttu*, a concave elongated disc, for the upper portion of the ear. Both these are worn by *Pacca* and *Cutti* varieties of characters. The female characters and *Tāṭi* generally wear only *Kuṇḍala*, also called *Tūkkū*.

The dress for the body is simple, consisting mainly of what is called the *Koṭalāram*, the cover for the breast. It is a movable vest held in position by means of threads. The saintly characters generally have only garlands. Over this vest across the shoulders hang what are called *Uttariyams*, one of which must be red in colour held in position by means of a *Keyūram* on the upper arm. There must be besides at least one more *Uttariyam* of white, but the actual number will depend upon the importance of the character. The forearm is generally adorned with a *Kaṭakam* and above that are worn some *Valas*, or bangles. The upper arm (See Plate IV-ii seated figure) will have besides the *Keyūram* what may be termed a shoulder blade. In the case of the female characters, there will not be this shoulder blade nor the *Uttariyam*, while the *Koṭalāram* will have false breasts adorned with garlands made of glass beads, while the waist is generally adorned by an ornate waistbelt.

The skirt, worn over drawers, is made of long pieces of cloth white in colour with borders adorned with lace work, (See Plate IV-i & ii). The pieces are over a foot in width and are strung closely, the whole being so arranged that while it forms a beautiful skirt, it gives absolute freedom of motion for the legs for acting and dancing. The two sides of the skirt are adorned with embroidered cloth (see Plate IV-i & ii) while in front hangs down what is termed a *Munti*, (See Plate IV-i the figure to the left). A leather strap, carrying belts, is tied on both the calf muscles, while at the ankles there is an ornate bandage as can be seen in Plate IV-ii.

Such, in brief, is the costume that the *Kathakali* actors use. In devising it, ample consideration appears to have been bestowed to suit the costume to the accompaniments and accessories of the stage, which it must be remarked is to a great extent primitive. The heavy costume no doubt makes the actors move with slow and measured gait, but it does not preclude the possibility of quick change in pose and position; and it is quite in keeping with the stately dignity of the conception and practice of this variety of our local vernacular entertainment—something which is as well echoed in the measured cadence and movement of the highly finished and literary nature of the language. It deserves also to be pointed out that this elaborate, though stereotyped, costume is quite in keeping with the Hindu ideas of symbolic representation. It may not be quite happy from the realistic point of view; but as symbolising the conception of superior characters and of the free and natural play of *Rasas* and *Bhavas*, it can scarcely be said to be second to any. The very sight of a character reveals, as much as, if not more than, his action, the natural springs of his character and the innate motives of his actions. If to reveal the innate quality of the character through costume can be a source of success from the point of view of artistic conception, then our dramatists have indeed attained to a high degree of success in this branch of art; for even the most austere critic must perforce admit that the costume of the *Kathakali* actor does reveal character.

Coming to the other accoutrements of the stage, reference deserves to be made only to the musical instruments. These consist of a *Ceṇḍa*, a *Cenkila* and *Elattāḷam*. *Ceṇḍa*, the popular drum, is a wooden cylinder

with two ends open and covered up with leather pieces. *Cenkila* is a metal plate which is sounded in unison with the drum and these two and the *Elattālam*, which is a bigger variety of cymbal are sounded to provide time to the acting and stepping which are done to the vocal music. There is also a curtain used which is held in position, when wanted, by two men stationed there for the purpose. As for the stage, there is nothing except a temporary shed put up above the actors, while the audience have all to sit down in the open yard. The only source of light is the big brass lamp kept in front of the actor with wicks in all the four directions. As has already been mentioned, the play is always open to the public.

(viii) Conclusion

We have in the preceding sections referred to the more important varieties of our secular theatre. Before we conclude reference may also be made to two other varieties, *Porattu-Kali* and modern dramas.

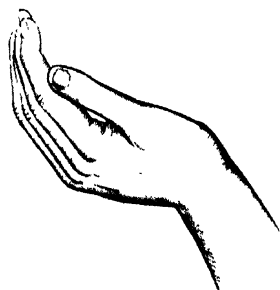
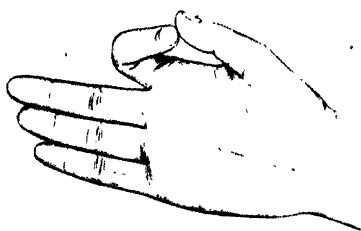
The former of these, *Porattu-Kali*, is a variety of our theatre which has found great popularity among the lower orders of Hindus. The general features of the stage are more or less similar to those of *Kathakali*; but there is considerable difference in matters of costume and general acting. In these matters it more or less tends to the modern type of dramas. But it is also different from this in that it is characterised by a complete absence of refinements of any kind. It appears that *Porattu-Kali* is a variety of entertainment introduced from the East Coast, and consequently it has never risen to the aesthetic, literary or dramatic position of *Kathakali*.

Coming to the field of modern drama, it has to be confessed that we have not much to our credit. The extreme popularity of *Kathakali*, *Tullal*, etc. probably stood in the way of the development of the modern type of dramas. This evidently is a later growth, probably not more than a generation old and it has had two distinct stages in its development. In the first period of growth, it was modelled upon the Tamil drama with plenty of music and scenic equipment with but little of real acting. This has had a short spell of existence. The spread of English education brought with it a knowledge of the modern stage and a development of that sort of literature, known as the Novel. When once the latter became popular, scenes from well-known novels began to be staged. Besides, a number of farces, portraying current social life, have been produced evidently for the purpose of the stage. Year after year farces are being produced, but so far they have had only an ephemeral existence. It appears more or less that in the field of modern drama our development lies in the direction of prose-drama. Amongst the novels that have lent themselves to the purposes of the stage, the most important are Mr. Candu Menon's *Indu Lekha*, our first and greatest social novel, Mr. C. V. R. Pillai's *Marthanda Varma*, the great historical novel, and H. H. Rama Varma Appan Thampuram's *Bhūtarāyar*, the greatest novel of the day.

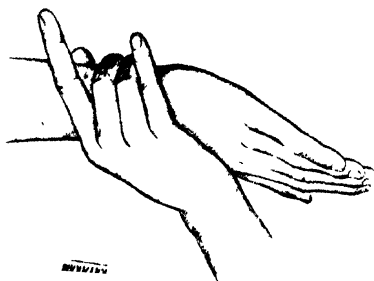
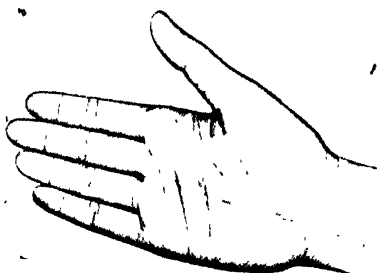
Enough has now been said to show that Kerala has as much variety in the secular department of her theatre as she has in the religious department. Of these *Kathakali* and *Tullal* are the most important both

from the literary and dramatic points of view, and these are peculiarly Malayali in spirit, in conception and in practice. Both these again have their origin in a quarrel and that with semi-religious Sanskrit varieties: *Kathakali* is the off-shoot of a quarrel over *Kṛṣṇāṭṭam*, and *Tullal* of a quarrel with *Cākyār* acting a *Prabandham Kūttu*. And both have alike tended to the enrichment of our vernacular literature. To the student of dramaturgy, *Kathakali* has its own particular appeal to make and interest to yield. Apart from the code of gesture language it has evolved for its own purposes, herein may be seen almost the highest perfection of the arts of acting and dancing, the perfect realisation as yet known of the technique so scientifically elaborated and described by Bharata in his *Nāṭyā Sāstra*. And these two constitute our richest heritage in the field of our stage and literature.¹

¹ The information presented here is mainly based on oral sources. Different local variations also might exist. Any suggestions will be thankfully received.

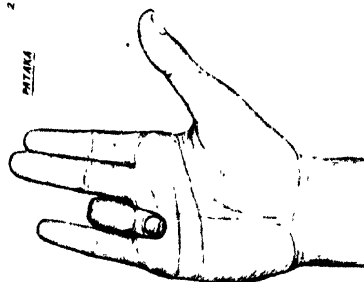


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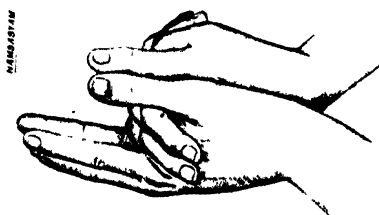


VARAṆAS

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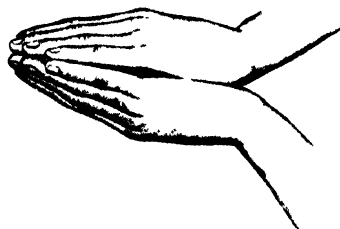
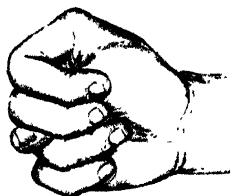


VARAṆAS



VARAṆAS

MUSHTI



VARAṆAS

(Through the courtesy of the Superintendent of Archaeology, Trivandrum.)

(i) Prabandham Kuttu.



(ii) Tullal.



(Through the courtesy of the Honorary Superintendent, The State Museum, Trichur.)

(i) Korattiyattam.

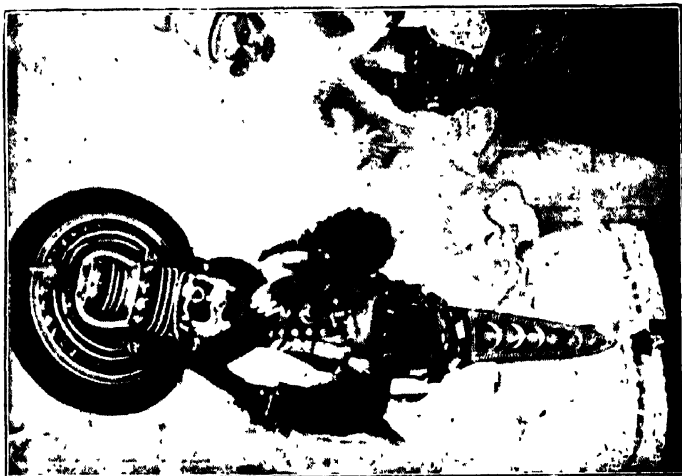


(ii) Kayyukottikali.

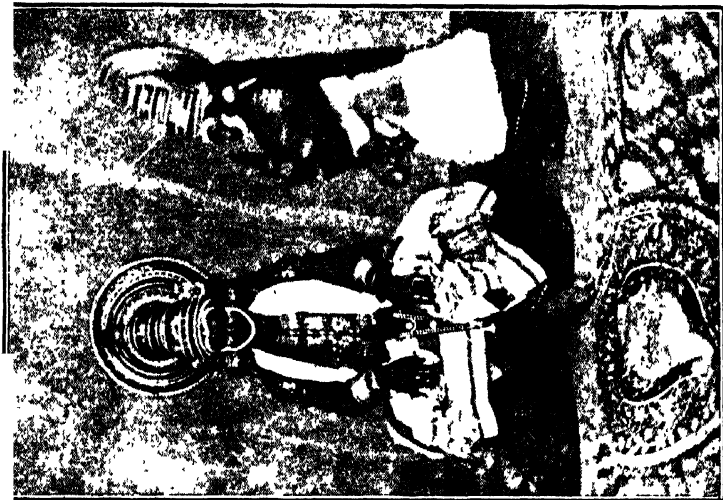


(Through the courtesy of The Honorary Superintendent, The State Museum Trichur.)

1) Cokanna Tāṭi.

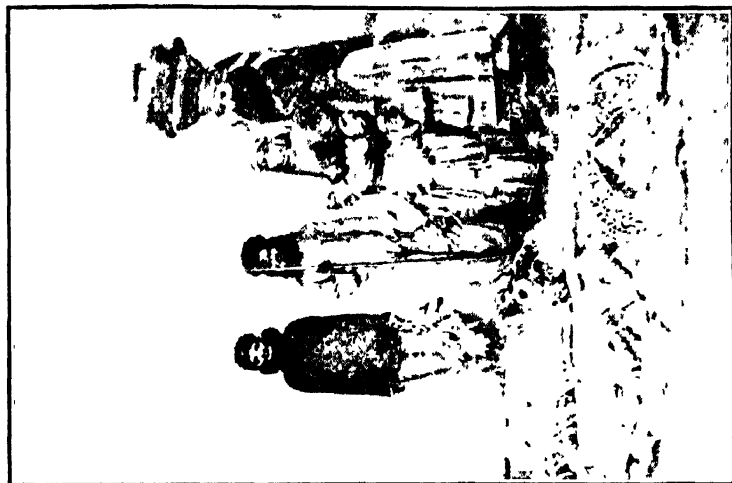


(ii) Pacca,



(Through the courtesy of the Sarvalhikariakar to His Highness the Maharaja of Cochin)

Mr. Karti.



Through the courtesy of the Sarvaullukaniakar to His Highness the Maharaja of Cochin.)

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SRĪ MUKUNDAMĀLĀ

WITH

TĀTPARYADĪPIKA

OF

RĀGHAVĀNANDA

K. R. PISHAROTI.

मुकुन्दमाला ।



यत्प्रसादलवलाभतः परां सिद्धिमेति मलिनोऽपि मानवः ।

यत्प्रसादविधुरोऽपि बद्धयते बुद्धिमाञ्छरणमेमि तं हरिम् ॥

इह खल्वखिललोकपरिपालनपरस्य कमलावल्लभस्येव भूमण्डलसंरक्षणसमग्रशक्ति-
मत्तयाऽम्भोरुहसम्भवस्येव भारतीविलासविभवभूमितया कात्यायनीकान्तस्येव कंस-
मथनचरणकमलपाथोधरमूर्धतया कश्चनावतारः केरळचक्रवाळचक्रवर्ती सादराराधितगुरुवरक-
रुणाकटाक्षवीक्षणक्षपितकल्मषधिषणतयाऽक्षमार्गावतीर्णवेदान्तार्णवमध्याद्योतमानमीमांसाऽन-
न्तशायिभगवदात्मतत्त्वः कथं नामास्मात् संसारसागरादत्यल्पबुद्धिशक्तिमतामपि प्राणिनां
निस्तारस्स्यादिति परमकृपाकुलहृदयः,

“ न साधयति मां धर्मो न सांख्यं योग उद्धव ! ।

न स्वाध्यायस्तपस्त्यागो यथा भक्तिश्शर्मोर्जिता ॥

धर्मस्सत्यदयोपेतो विद्या वा तपसाऽन्विता ।

मद्भक्त्यपेतमात्मानं न सम्यक् प्रपुनाति हि ॥

नाहं वेदैर्न तपसा न दानेन न चेज्यया ।

शक्य एवंविधो द्रष्टुं दृष्टवानसि मां यथा ” ॥ इति

भगवद्भक्तिरहितानां स्वस्ववर्णाश्रमविहितधर्मानुष्ठातृणामपि ब्रह्मसाक्षात्कार-
रूपपरमपुरुषप्राप्त्यभावश्रवणात्,

“ भक्त्याऽहमेकया ब्राह्मशुद्धयाऽत्मा प्रियस्सताम् ।

भक्तिः पुनाति मन्निष्ठा सकामानपि सम्भवान् ॥

केवलेन विभावेन गोप्यो गावो नगा मृगाः ।

येऽन्ये मूढधियो नागाः स्निग्धा मामापुरञ्जसा ॥

यन्न सांख्येन योगेन दानव्रततपोऽध्वरैः ।

व्याख्यास्वाध्यायसन्यासैः प्राप्नुयाद्यन्नवानपि ॥

भक्त्या त्वनन्यया शक्य अहमेवंविधोऽर्जुन ! ।

ज्ञातुं द्रष्टुं च तत्त्वेन प्रवेष्टुं च परन्तप ! ॥ इति

इहजन्मन्युक्तधर्मादिसाधनविकलानामपि भक्तिमतां तन्माहात्म्यादेव पुमर्थावा-
प्तिश्रवणाच्चानौपाधिकी भक्तिरेव मुक्तिसाधिकेति सैवाभ्यर्थनीया मुमुक्षुभिरित्यतस्तदुपाय-
त्वेन श्रीनारदानुगृहीतमौकुन्दाष्टादशाक्षरं मन्त्रं मुकुन्दचरणशब्दाभ्यां प्रत्यभिज्ञापनया
[अत्र] प्रमाणयन् मुकुन्दमालाख्यं स्तोत्ररत्नमकरोत् ।

तस्यास्य स्तोत्ररत्नस्य व्याख्यां शक्त्यनुरोधतः ।

करिष्याम्यात्मशुद्ध्यर्थं नाम्ना तात्पर्यदीपिकाम् ॥

तत्र तावदहमस्मीत्यनुभवादस्मि वा नास्मि वाऽहमिति सन्देहस्य नैवाहमस्मीति
विपर्ययस्य चात्मनि कस्यचित् कदाचित् कुलचिदप्यनुदयादसम्भवाच्च निश्चितसद्भाव
आत्मा ; ततोऽन्यस्मिन् सर्वस्मिन् सर्वदा सत्वानुभवसत्तासन्देहानुदयतद्विपर्ययप्रत्ययानुद-
यानामभावादननिश्चितसत्ताक[ल्प]मित्यात्मसत्ताधीनैव सत्ता । तथाच 'सदेव सोम्येदमग्र
आसी' दिति श्रुतौ आत्मैव सदित्युच्यते, तच्च 'तदैक्षते' ति वाक्यशेषेण स्पष्टीकृतं, चेत-
नादन्यस्येक्षितृत्वासम्भवात्तथा साक्षात्प्रेमास्पदस्य लोके आनन्दत्वप्रसिद्धेरात्मनश्च परप्रेमास्प-
दत्वानुभवात्, 'आत्मनस्तु कामाय सर्वं प्रियं भवति, तदेतत् प्रेयः पुलात् प्रेयो वित्तात् प्रेयो-
ऽन्यस्मात् सर्वस्मादन्तरतर' मिति श्रुतेः, अन्यशेषित्वे सति स्वसत्तायामनन्यशेषत्वरूपसु-
खलक्षणलक्षितत्वादात्ममालावशेषसुसोत्थितपुरुषसुखपरामर्शलिंगायातसौषुप्तसुखानुभवाच्चात्मन
आनन्दस्वरूपत्वम् । यद्यपि वैषयिकानन्दस्य साक्षात् प्रेमास्पदत्वं प्रसिद्धं तथापि तस्य
स्वरूपतो न प्रियत्वं, परसुखे तददर्शनात् ; किन्तु आत्मार्थतया । आत्मा तु स्वरूपेणैव
प्रियः, महाव्याध्यादिभिः स्वातिदुःखकरत्वे देहादावपि देहिनामुपेक्षादर्शनात् । नन्वात्म-
नोऽपि स्वरूपेण न प्रियत्वं शक्नोतीत्यभवादिति चेत्, न । आत्मनोऽन्यस्यानात्मत्वात्,
स्वस्य स्वयंविरोधित्वानुपपत्तेश्च, शत्रुमित्रादिबुद्धेर्देहादिमात्रनिष्ठत्वात् ; अत आत्मन
एव स्वतः प्रेमास्पदत्वं न वैषयिकानन्दस्येति परमानन्दरूप आत्मा । 'तथाच आनन्दो
ब्रह्मेति व्यजानात् ; एतस्यैवानन्दस्यान्यानि भूतानि मात्रासुपजीवन्ती'त्यादौ पूर्णानन्दत्वे-

नात्मैव प्रतिपाद्यते । एवं सर्वविधिनिषेधसाक्षित्वात् स्वयमनन्यसाक्षित्वाच्च स्वप्रकाश-
चिद्रूप आत्मा । तथाच ‘ तमेव भान्तमनुभाति सर्वं तस्य भासा सर्वमिदं विभाति । अत्रायं
पुरुषस्त्वयं ज्योतिर्[ज्योतिर्]भवत्यात्मैवास्य ज्योति ’ रित्यादौ स्वयंप्रकाशचित्त्वेनात्मैवोप-
दिश्यते । एवं च परमार्थतस्सच्चिदात्मकं विश्वोत्पत्तिस्थितिसंहारकारणं ब्रह्मैवात्मा, न तत्कार्यं
तदंशो वा, ‘ अयमात्मा ब्रह्म, क्षेत्रज्ञश्चापि मां विद्धि ’ इत्यादिश्रुतिस्मृतिवाक्यात् ; जीवाः
परमात्मनस्तत्त्वतो न भिद्यन्ते, आत्मत्वात्, परमात्मवत् ; विपर्ययेऽन्यतरस्यानात्मत्वप्रसंग
इत्यनुमानाच्च । तथाप्यनुभूयमानत्वादात्मवदपलापानर्हमद्वितीये द्वैतस्यासम्भावित-
त्वात् ‘ मायामात्रमिदं द्वैतमद्वैतं परमार्थतः ’ इति श्रवणाच्च माहेन्द्रजालवन्मायामात्रसिद्धं
स्तोतृस्तुत्यस्तुतिभेदमादाय स्तोतुमुपक्रमते—

मुकुन्द ! मूर्ध्ना प्रणिपत्य याचे

भवन्तमेकान्तमियन्तमर्थम् ।

अविस्मृतिस्त्वच्चरणारविन्दे

भवे भवे मेऽस्तु भवत्प्रसादात् ॥ १ ॥

मुकुन्देति ॥ यथाह साम्बः—“ स्तोता स्तुत्यं स्तुतिरिति भवान् कर्तृकर्मक्रियात्मा
क्रीडत्येक ” इति, ‘ त्वां स्तोप्यामि स्तुतिभिरिति मे यस्तु भेदग्रहोऽयं सैवाविधे ’ ति च ।

“ बद्धो मुक्त इति ह्याख्या गुणतो मे न वस्तुतः ।

गुणस्य मायामूलत्वान्न मे मोक्षो न बन्धनम् ” ॥

इति भागवतवाक्यात् बन्धवन्मायामात्रसिद्धस्य मोक्षस्य मायामयादेव
स्तोतृस्तुत्यस्तुतिभेदव्यवहारदुपपत्तेर्नाभिमतफलसिद्धयभावचोधावकाशोऽपि । तच्च
साम्बोक्तम्—“ वेद्योपायः पर इति बुधैर्गीयते खल्वविधे ’ ति । सर्वमन्यदनित्याशुचि
दुःखात्मतया परित्यज्य नित्यशुद्धनिरतिशयानन्दलक्षणं स्वपादारविन्दमेव शरणीकृत्य
स्थितानां तत्सौभाग्यातिशययोगात्तत्सेवामात्रपरितुष्टानां च पुरुषधौरेयाणां स्वस्वाभाव्या-
न्निशेषदुःखनिवृत्तिनिरतिशयानन्दावासिलक्षणां मुक्तिं ददातीति मुकुन्दः । हे मुकुन्द,
अहं भवन्तं मुमुक्षुजनेप्सिततमं सर्वभूतात्मानं सर्वेश्वरञ्च, मूर्ध्ना साष्टाङ्गपातं प्रणिपत्य श्रद्धा-
भक्तिपुरस्सरं नत्वा एकान्तं नियतं प्रयोजनान्तरनिमित्तं न भवति, इयन्तमेतावन्मात्रं न पुन-

स्वर्गापवर्गादि । यद्वा — इयन्तं परिमितं न, अपरिमितरूपनिर्वाणं उदबिन्दुमालमिवाम्भोधिं
मीनपोतकः, अर्थं प्रयोजनं पुरुषार्थं वा धर्मादीनां बहुदुःखसाध्यसाधनायतत्त्वादनित्यत्वाद-
नात्मत्वाच्चासुखानां न पुरुषार्थत्वम् । भगवद्भक्तेर्निस्तरङ्गतच्चरितपीयूषपारावारविहरणतन्ना-
मामृतास्वादनतद्विग्रहरसायनपानपरमनिर्वृतिप्रवाहमयत्वात् सर्वभूतात्मनि तस्मिन्
नित्यनिरतिशयप्रीतिप्रसरमात्रपरमार्थत्वेनास्यास्तत्साक्षाद्बोधशिरस्कत्वमिति मुक्तेरेतन्नान्तरी-
यफलत्वाच्च मुख्यपुरुषार्थत्वमित्याशयः । याचतेर्द्विकर्मकत्वात् भवन्तमर्थमित्युपदेशः । याचे
प्रार्थये; कोऽसावर्थो यन्वं याचसे इत्याह—मे मम, भवे भवे जन्मनि जन्मनि, त्वच्चरणार-
विन्दे तव चरणमेव यदरविन्दं तस्मिन्विषये । अविस्मृतिः विस्मृतिर्विस्मरणं तदभावः
स्मृतिप्रमोषाभावः । अथवा विस्मरणविरोधिनी अविस्मृतिः स्मृतिः । यद्वा विस्पष्टा स्मृतिः
विस्मृतिः स्मृतित्वेन प्रसिद्धं ज्ञानं तस्या अन्या अनुभूतिरविस्मृतिः । अस्तिवति प्रार्थनायां
लोढ् । त्वत्कर्तृका स्मृतिः किमिति मत्तः प्रार्थयत इत्यत उक्तं—भवत्प्रसाददिति ।
भवतोऽन्तर्यामित्वान्न त्वत्प्रसादेन विना स्मृतिश्शक्यक्रियेत्याशयः । तदुक्तम् ‘नष्टो मोहः
स्मृतिर्लिब्धा त्वत्प्रसादान्मयाऽच्युते’ ति । चरणानुस्मरणस्यैव प्रार्थनीयत्वं न मुक्तेरिति
मुकुन्देति सम्बोधनेन सूचितम् । भक्तानां मुक्त्यव(त्त्युप)पादनस्वभावं भवन्तं प्रति न मुक्ति-
रभ्यर्थनीया किन्तु भक्तिमात्रमिति भावः । भजनीयस्य भगवतः सर्वभूतात्मत्वं सर्वेश्वरत्वं च
मुकुन्दपदादेव व्यञ्जितम्, अनात्मनोऽनीश्वरस्य वा परमपुरुषार्थप्रदत्वासम्भवात् । चरणार-
विन्दइत्येकवचनं चरणयोस्तत्त्वंपदार्थमात्रपरमार्थयोर्वस्तुतो भेदाभावमुद्भावयति चरणं
पवित्रमिति वत् । मुकुन्देति छेदेनास्य स्तोत्रस्य मूलभूते मन्त्रराजे मुकुन्दशब्दस्य चरणशब्देन
षष्ठीसमासभ्रमोऽपास्तः । भवे भवे इति तत्रत्यस्सद्शब्दो व्याख्यातः । अविस्मृतिरस्त्व-
त्यंशेन तद्गतं प्रपद्ये पदं विवृतम् । चरणावितिपदप्रतिपदं चरणारविन्दे इति । ॥ १ ॥

ननु तव मुमुक्षुत्वे भक्तिर्मोक्षाय भविष्यतीति तत्प्रार्थनातुबुभुक्षुत्वे । नरकपात-
दुःखपरिहरणेन स्वर्गसुखप्राप्तये स्यादिति । तत् कथमेकान्तार्थत्वमस्या इत्याशङ्क्याह—

नाहं वन्दे तव चरणयोर्द्वन्द्वमद्वन्द्वहेतोः

कुम्भीपाकं गुरुमपि हरे ! नारकं नापनेतुम् ।

रम्या रामा मृदुतनुलता नन्दने नाभिरन्तु

भावे भावे हृदयभवने भावयेयं भवन्तम् ॥ २ ॥

नाहमिति । अहं ब्रह्मास्मीतिवाक्यीयबुद्धिवृत्त्यभिव्यक्तः स्वाध्यस्तमज्ञान-
तत्कार्यात्मकं द्वैतजातं हरतीति—हरिः । हे हरे ! अहं तव चरणयोर्द्वन्द्वचरणद्वयं,
अद्वन्द्वहेतोर्निखिलद्वैतोपशमरूपं मोक्षं प्रयोजनीकृत्य न वन्दे । त्वत्कथासुधास्वादसुख-
विरोधित्वेनास्यानपेक्षितत्वात् । यथोक्तं श्रुतिगीतासु—

“ दुरवगमात्मकत्वनिगमाय तवात्ततनोश्चरितमहामृताब्धिपरिवर्तपरिश्रमणाः ।

न परिलषन्ति केचिदपवर्गमपीश्वर ! ते चरणसरोजहंसकुलसंगविसृष्टगृहाः” ॥

इति । नागकं नरके भवं, गुरुं अपर्यन्तदुःखहेतुं कुम्भीपाकं कुम्भ्यां ताम्रायसमये कुम्भे
पापिनो निक्षिप्य महता दहनेन यः पाकस्तमपनेतुमपि न वन्दे । भक्तानां भजनविधा-
तस्यैव दुःखत्वात् । सनकादिवाक्यतस्तदवगन्तव्यम्—‘ कामं भवस्ववृजिनैर्निरयेषु न
स्ताच्चेतोऽल्लिख्यदि हि ते पदयो रमेते ’ ति । नन्दयत्यानन्दयति सुकृतिन इति नन्दने
नन्दनोधाने । रम्या रमणीयाकारा मृदुतनुलता मृद्वी सुखस्पर्शा तनुलता यासां ता रामा
उर्वशीमेनकाद्या अभिरन्तुमनुभवितुमपि न वन्दे । क्षणिकत्वदुःखसम्भिन्नत्वसातिशयत्वा-
दिदोषानुषङ्गात् स्वर्गसुखस्यास्पृहणीयत्वमिति भावः । तदुक्तं भागवतपुराणे—

“ एवं लोकं परं विद्यान्मश्वरं कर्मनिर्मितम् ।

अतुल्यातिशयध्वंसि यथा मण्डलवर्तिनाम् ” ॥

इति । किमर्थं तर्हि वन्दस इत्याह—भावे भावे जन्मनि जन्मनि हृदयभवने हृत्पुण्डरीकमध्ये
आत्माभेदेनेति यावत् । भवन्तं शुद्धसत्त्वमूर्तिं भावयेयं ध्यायेयम् ॥ २ ॥

भवतु भक्तेर्भोगमोक्षार्थत्वाभावादैकान्तिकत्वम् , तथापि पुरुषार्थत्वाद्धर्मार्थिकामा अपि
प्रार्थनीया इती‘ यन्तमर्थं याच ’ इत्युक्तमित्याशङ्क्याह—

नास्था धर्मे न वसुनिचये नैव कामोपभोगे

यद्यद्भव्यं भवतु भगवन् ! पूर्वकर्मानुरूपम् ।

एतत् प्रार्थ्यं मम बहुमतञ्जन्मजन्मान्तरेपि

त्वत्पादाम्भोरुहयुगगता निश्चला भक्तिरस्तु ॥ ३ ॥

नास्थेति ।

“ उत्पत्तिं च विनाशं च भूतानामार्गतिं गतिम् ।
वेत्ति विद्यामविद्यां च स वाच्यो भगवानिति ” ॥

हे भगवन् मम धर्मे शुभसंस्कारात्मनि नैवास्था अर्थना, तत्फले स्वर्ग-
सुखेऽपेक्षाभावात् कर्मफले नरकदुःखे द्वेषाभावाच्च । तथापि स्वधर्मनिष्ठाऽभ्यर्थनीया; नो चेत्
स्वेच्छाचारित्वेन भगवद्भजनभंगप्रसङ्गात्—इति चेन्न ।

“ त्यक्त्वा स्वधर्मं चरणाम्बुजं हरेर्भजन्नपक्रोऽथ पतेत्ततो यदि ।
यत्र क वाऽभद्रमभूदमुष्य किं को वाऽर्थ आप्तो भजता स्वधर्मतः ” ॥

इति पुराणवाक्याद्धर्मनिष्ठाया भक्तिं प्रत्यप्रयोजकत्वप्रतीतेः । ननु तद्वाक्यादेव भक्तिं प्रति
प्रयोजकत्वमपि धर्मनिष्ठायाः प्रतीयते ।

“ धर्मस्स्वनुष्ठितः पुंसा विष्वक्सेनकथासु यः ।
नोत्पादयेद्यदि रतिं श्रम एव हि केवलम् ॥
अतः पुम्भिर्द्विजश्रेष्ठा ! वर्णाश्रमविभागशः ।
स्वनुष्ठितस्य धर्मस्य संसिद्धिर्हरितोषणम् ॥
दानव्रततपोहोमजपस्वाध्यायसंयमैः ।
श्रोयोविधिभिरन्यैश्च कृष्णे भक्तिर्हि साध्यते ” ॥

इति । श्रुतिश्च—‘ तमेतं वेदानुवचनेन ब्राह्मण विविदषन्ति यज्ञेन दानेन तपसाऽनाशकेने ’
ति । उदितं च विश्वसाक्षिणा कृष्णेन कृष्णायाकृष्णात्मने शरणमुपगताय—

“ यज्ञदानतपःकर्म न त्याज्यं कार्यमेव तत् ।
यज्ञो दानं तपश्चैव पावनानि मनीषिणाम् ॥
यतः प्रवृत्तिर्भूतानां येन सर्वमिदन्ततम् ।
स्वकर्मणा तमभ्यर्च्य सिद्धिं विन्दति मानवः ” ॥

इति ॥

“ श्रेयान् स्वधर्मो विगुणः परधर्मात्स्वनुष्ठितात् ।
स्वधर्मे निधनं श्रेयः परधर्मो भयावहः ” ॥

इति च । तस्मात् भक्तिकामेन वर्णाश्रमधर्मो न त्याज्यः प्रत्युतानुष्ठेय एवेति चेत्—
तन्मन्दम् । उक्तवचनानां भक्तिबहिरङ्गसाधनतत्परत्वात् ‘त्यक्त्वा स्वधर्मं चरणाम्बुजं
हरेर्भज’न्निति वाक्यस्य तदन्तरङ्गसाधनविधायकत्वाच्च ; “ सत्यानृते सुखदुःखे वेदानिमं
लोकममुञ्च परित्यज्यात्मानमन्विच्छे ” दित्यादिवत् । बहिरङ्गसाधनपरत्वं च तेषां तन्मुखा-
देवावगन्तव्यम् । विष्वक्सेनकथासु रतिं नोत्पादयेच्चेत् स्वनुष्ठितोऽपि धर्मः श्रम एव ।
वेदानुवचनादीनां तमेवं विविदधन्तीत्यादिरूपत्वात् सहस्रसंवत्सरसत्रदीक्षितानां शौनकादीनां
मुनीनां पृथक् भगवच्चरितश्रवणप्रवृत्तिरपि कर्मणां भक्तिबहिरङ्गसाधनत्वमवगमयति । अत
एव गीतान्तेऽर्जुनाय कृष्णभट्टारकेणोपदिष्टम्—

“ सर्वधर्मान् परित्यज्य मामेकं शरणं ब्रज ।
अहं त्वा सर्वपापेभ्यो मोक्षयिष्यामि मा शुचः ” ॥

इति । भागवते चोद्धवाय ।

“ तस्मात्त्वमुद्धवोत्सृज्य चोदनां प्रतिचोदनाम् ।
प्रवृत्तिञ्च निवृत्तिञ्च श्रोतव्यं श्रुतमेव च ॥
मामेकमेव शरणमात्मानं सर्वदेहिनाम् ।
या हि सर्वात्मभावेन यास्यसे ह्यकुतोभयम् ॥

इति ।

“ यदृच्छया मत्कथादौ जातश्रद्धस्तु यः पुमान् ।
न निर्विण्णो नातिसक्तो भक्तियोगोऽस्य सिद्धिदः ” ॥

इत्युक्त्वा

“ तावत्कर्माणि कुर्वीत न निर्विद्येत यावता ।
मत्कथाश्रवणादौ वा श्रद्धा यावन्न जायते ” ॥

इति चोपदिष्टम् । तथापि आश्रमधर्मनिष्ठा भक्तेनाभ्यर्थनीयेति चेन्न । आश्रमान्तरस्थानां
जनकादीनामनाश्रमिणां विदुरादीनां दुराचाराणां गोपिकादीनां धर्मव्याधादीनां च
कृष्णभक्तिश्रवणात् ;

“ यो भवेत् पूर्वसन्यासी तुल्यो वै धर्मतो यदि ।
तस्मै प्रणामः कर्तव्यो नेतराय कदाचन ” ॥

इति यतिधर्मेण

“ विसृज्य स्वयमात्मस्थां दृशं व्रीलाञ्च दैहिकीम् ।
प्रणमेद्दण्डवत् भूमावाञ्चण्डालगोखरम् ” ॥

इति भागवतधर्मस्य विरोधाच्च ।

“ यन्न सांख्येन योगेन दानव्रततपोऽध्वरैः ।
व्याख्यास्वाध्यायसन्यासैः प्राप्नुयाद्यत्नवानपि ॥
न ज्ञानान्न च वैराग्यात् प्रायः श्रेयो भवेदिह ।
श्रुतमप्यौपनिषदं दूरे हरिकथामृतात् ॥
यन्न सन्ति द्रवच्चित्तप्रेमाश्रुपुळकोत्सवाः ” ॥

“ नायमात्मा प्रवचनेन लभ्यो न मेधया न तपसा श्रुतेन ।
यमवैष वृणुते तेन लभ्यस्तस्यैष आत्मा विवृणुते तनुं स्वाम् ॥

“ न वेदयज्ञाध्ययनैर्न दानैर्न च क्रियाभिर्न तपोभिरुग्रैः ।
एवंरूपः शक्य अहं नृलोके द्रष्टुं त्वदन्येन कुरुप्रवीर ! ॥
भक्त्या त्वनन्यया शक्य अहमेवंविधोऽर्जुन ! ।
ज्ञातुं द्रष्टुं च तत्त्वेन प्रवेष्टुं च परन्तप ! ॥
तेषामेवानुकम्पार्थमहमज्ञानजं तमः ।
नाशयाम्यात्मभावस्थो ज्ञानदीपेन भास्वता ” ॥

इति भक्तियोगराहित्ये वैराग्यसहितस्य ज्ञानयोगस्य वैफल्यश्रवणात्तत्साहित्ये साफल्यश्रवणाच्च
भक्तियोग एव श्रेयान् । अत एव पुराणोपनिषदि

“ स वै पुंसां परो धर्मो यतो भक्तिरधोक्षजे ।
अहैतुक्यव्यवसिता ययाऽत्माऽऽशु प्रसीदति ” ॥

इति निगदितम् । ‘वर्णाश्रमविभागशः । स्वनुष्ठितस्य धर्मस्य संसिद्धिर्हरितोर्षण’ मिति च ।
वक्ष्यति चात्र भागवतशिरोमणिस्वयमेव ‘आम्नायाभ्यसनान्यरण्यरुदित’ मित्यादि । तस्मात्
भक्तेन भागवतधर्मा एवानुष्ठेयाः न वर्णाश्रमधर्माः, तेषां क्वचित् सतामपि साक्षात् भक्तिहेतु-
त्वाभावात् । भागवतधर्माश्च ‘जिहे ! कीर्तय केशव’ मित्यादिना स्वयमुपदेक्ष्यन्ते ।
यत् पुनः स्वधर्मनिष्ठाभावे यथेष्टचेष्टाप्रसङ्गो भक्तजनस्येति तदसत् । स्वशब्देन भक्तोदीरणे
वर्णाश्रमधर्मानुष्ठानेपि भगवच्चरितश्रवणकीर्तनादिधर्मानुष्ठानपरत्वे स्वेच्छाचारत्वाभावात्,
अतः परत्वे भक्तत्वासम्प्रतिपत्तेश्च ; आश्रम्युदीरणे च तद्धर्मनिष्ठाभावो दोषयैव । को
नामाऽन्यथा ब्रूते ! । अथ ब्रूये—

“आश्रमादाश्रमं गच्छेन्नान्यथा मत्परश्चरेत् ।
अनाश्रमी न तिष्ठेत्तु दिनमेकमपि द्विजः ॥
आश्रमेण विना तिष्ठन् प्रायश्चित्तीयने नरः ।
अनाश्रमी न तिष्ठेत् द्विजः कस्याञ्चिदापदि ॥
यश्शास्त्रविधिमुत्सृज्य वर्तते कामकारतः ।
न स सिद्धिमवाप्नोति न सुखं न परां गतिम् ॥”

“नावेदविन्मनुने तं बृहन्तम् ॥”

इत्यादि वाक्यात्त्रैवर्णिकानामाश्रमित्वनियमात् भक्तैरपि ब्राह्मणादिभिस्वधर्मनिष्ठैर्भवितव्य-
मित्यनुचिता तदनास्थावाचांयुक्तिरिति । तदप्यचारु । वर्णाश्रमाभिमानिनां भक्तत्वा-
सम्प्रतिपत्तेः । तथा च पूरणोपनिषत्—

“न यम्य जन्मकर्मभ्यां न वर्णाश्रमजातिभिः ।
सज्जनेऽस्मिन् अहंभावो देहे वै स हरेः प्रियः ॥”

इति । न च तत्र वर्णाश्रमाभिमानत्याग एव भक्तस्योक्तो न तत्कर्मलिङ्गत्याग इति वाच्यम् ।

“ज्ञाननिष्ठो विरक्तो वा मद्भक्तो वाऽनपेक्षकः ।
सर्लिंगानाश्रमांस्त्यक्त्वा चरेदविधिगोचरः ॥”

इति वाक्यान्तरविरोधात् । कुटीचकबहूदकहंसपरमहंसभेदेन चतुर्विधेतुर्याश्रमेऽन्त्यां पदवी-
मवलम्ब्य पूर्वलिङ्गधर्मत्याग एव तत्रोक्तो न सर्वत्याग इत्यप्ययुक्तम् ।

“ बुद्धो बालकवत् क्रीडेत् कुशलो जडवच्चरेत् ।

वदेदुन्मत्तवद्विद्वान् गोचर्यान्नैगमश्चरेत् ॥ ”

इत्युत्तरवाक्यविसंवादात् । न खलु परमहंसपरित्राजकधर्मानुष्ठातृत्वं पशुचालकोन्मत्तजडव-
द्वर्ज्यावर्ज्यवित्रेकशून्यत्वनित्यकृतकृत्यत्वं स्वाद्वसादुभोगसमत्वलोकव्यवहारोदासीनत्वानि च
निर्विवादमेकत्र वर्तितुमर्हन्ति । परमहंसपदादपि परिनिष्ठितभक्तिज्ञानवैराग्यभागवतोत्तमस्य
ग्रहणे (तु) न विवादः । विदुषः कर्तव्यान्तराभावात्, भावे चाविद्वत्त्वात् । श्रूयते हि
लैंगपुराणे—

“ ज्ञानामृतेन तृप्तस्य त्यक्तसङ्गस्य योगिनः ।

कर्तव्यं नास्ति विप्रेन्द्राश्चास्ति चेन्न स तत्त्ववित् ॥ ”

इति । श्रुतिश्च “ क्षीयन्ते चास्य कर्माणि तस्मिन् दृष्टे परावरे ” इति ।
मगवद्गीता च—

“ यदा ते मोहकलिलं बुद्धिर्व्यतितरिष्यति ।

तदा गन्तासि निर्वेदं श्रोतव्यस्य श्रुतस्य च ॥

एतद्बुद्ध्वा बुद्धिमान् स्यात् कृतकृत्यश्च भारते ॥ ”

इति । वर्णाश्रमाभिमानवतो देहान्माभिमानित्वावदयन्नावादज्ञत्वं च लैङ्गे श्रूयते—

“ वर्णाश्रमाभिमानी यस्त्यक्त्वा ज्ञानं द्विजोत्तमः ।

अन्यत्र रमते मूढस्सोऽज्ञानी नात्र संशयः ॥ ”

इति । यत् पुनः

“ शौचमाचमनं स्नानं न तु चोदनयाऽचरेत् ।

अन्यांश्च नियमान् ज्ञानी यथाहं लीलयेऽध्वरः ॥ ”

इति भागवतवाक्यान्तरम्, तत्र

“यद्यदाचरति श्रेष्ठस्तत्तदेवेतरो जनः ।

स यत् प्रमाणं कुरुते लोकस्तदनुवर्तते ॥”

इति स्मृतेस्तत्त्वज्ञोऽपि कश्चित् सद्धर्मपरिरक्षणार्थं पूर्ववदेव चञ्चेत् न विहितबुद्ध्या धर्मं चरेन्नापि निषेधबुद्ध्या विधर्मं परिहरेदपि तु कृतकृत्यत्वालीलयैव ।

“दोषबुद्ध्योभयातीतो निषेधान्नातिवर्तते ।

गुणबुद्ध्या च विहितं न करोति यथार्भकः ॥”

इति वाक्यान्तरादित्युच्यते ; न पुनस्तत्त्वज्ञेनाप्यवश्यं स्वधर्मोऽनुष्ठेय इति ; तस्येश्वरवद्विधिक्षिप्त्वाभावात् । यत्तु कश्चिदाह—विदुषः कर्तव्यान्तराभावेऽपि पूर्वाभ्याससंस्कारात् प्रागिवाऽऽदेहपातं स्वधर्मनिष्ठानिश्चय इति । तन्मन्दम् ; स्वधर्मशब्दात् भागवतधर्मग्रहणाङ्गीकारात् । यथोक्तम्—

“आत्मारामाश्च मुनयो (निर्ग्रन्था ?) अप्युरुक्रमे ।

कुर्वन्त्यहैतुर्कीं भक्तिमित्थंभूतगुणो हरिः ॥”

इति । ‘विवेचयन्मा धिषणा जानजस्तवै पुरा पार्यादिन्द्रमह’ इति च श्रुतिः । वर्णाश्रमधर्मपरिग्रहे

“सिद्धयोगफलो योगी लोकानां हितकाम्यया ।

भोगान् भुक्त्वा यथाकामं विहरन् वाऽत्र वर्तताम् ॥”

इति श्रीवायवीयपुराणवाक्यव्याकोपः । ‘अपि चेत् सुदुराचारो भजते मामनन्यभाक् । साधुरेव स मन्तव्य’ इति भगवद्वाक्यस्यानवकाशदोषविष्टता च स्यात् । ननु ‘नाविरतो दुश्चरितान्नाशान्तो नासमाहितः’ इति श्रुतिविरोधादियं स्मृतिर्विस्मृतिरेवेति चेत्, तन्न । अस्याः श्रुतेरपरिनिष्ठितज्ञानपुंविषयत्वात् ‘(नाशान्तमान)सो वा पि प्रज्ञानेनैवमाप्नुया’-दिति वाक्यशेषात् स्मृतेः परिनिष्ठितज्ञानपुंविषयत्वाच्च ‘सम्यग्यवसितो हि स’

इति वाक्यशेषात् । न च मूलशून्यदर्शनदौर्बल्यम्; ‘स यो मां विजानीयान्नास्य केन च कर्मणा । लोको मीयते न मातृवधेन न पितृवधेन न स्तेयेन भ्रूणहत्यये’ ति बह्वृच-
ब्राह्मणदर्शनात् । किञ्च पूर्वमभ्यस्तो धर्मो विदुषो न यतिधर्म एव परम्, अपि तु
गृहिवर्ण्यादिधर्मोऽपि चिरमनुष्ठित एवेति संस्कारात्तत्राप्यस्याप्रवृत्तिः कथं न निवार्यते ।
कथञ्चाबुद्धिपूर्वकारिणोऽस्याशुभकर्मपरिहारेण शुभकर्मस्वेव प्रवृत्तिस्साद्भवति बुद्धिपूर्वकारित्वे
वा कथमफलार्थित्वं समर्थ्यते, परानुग्रहफलार्थित्वे स्वपरविभागज्ञानशून्यता कथमुज्जीव्यते,
भक्तिज्ञानपौष्कल्यार्थित्वे कथं विदितवेद्यता निर्विवादमवस्थाप्येत;

“ न मय्येकान्तभक्तानां गुणदोषोद्धवा गुणाः ।

“ साधूनां समचित्तानां बुद्धेः परमुपेयुषाम् ”

इति भागवतं वाक्यमपि विदुषः पुण्यफलसम्बन्धे विरुद्धयेत ।

‘ तदधिगम उत्तरपूर्वाघयोरश्लेषविनाश । तद्दर्शनात् ’

इति वैयासिकं सूत्रमपि ।

“ यथा पुष्करपलाश आपो न श्लिष्यन्ते ।

एवमेवंविदपापं कर्म न श्लिष्यते ”

“ ज्ञानाग्निस्सर्वकर्माणि भस्मसात् कुरुतेऽर्जुन (तथा) ” ॥

इति श्रुतिस्मृतिप्रधानं प्रतिपक्षिपदेऽभिषिच्येत । तस्माद्विदुषश्शुभाशुभसाधारण्यमुचितं
तत्फलरागद्वेषाभावात् । अत एव च श्रुतिः—

‘ तस्य प्रिया ज्ञातयस्सुकृतमुपयन्त्यप्रिया दुष्कृतम् । ’

इति । ततश्चाधर्मानुष्ठान इव धर्मानुष्ठानेपि भक्तस्य नाग्रह इति नास्था धर्म इत्युचित-
मुक्तम्; तथाप्यर्थकामयोरभिलाषावश्यंभावः, अन्यथा जीवनाभावेन भजनभङ्गतादवस्थ्यात्,
ततश्च तद्धेतौ धर्मेऽप्यास्थया भाव्यमित्यत आह—न वसुनिचये—अर्थसञ्चये; न कामोप-
भोगे सक्चन्दनवनिताद्ये एव विषयानुभवे चास्थेति । एवं चेत् कथं जीवनमित्यत्राह—
यद्यत्सुखं दुःखं वा भव्यमवश्यं भवितव्यं तत् भवतु । कुतस्तत्सम्भव इत्यत उक्तम्

पूर्वकर्मानुरूपमिति । प्राचीनमेतद्देहारम्भकं यच्छुभमशुभं वा कर्म तस्यानुरूपं सदृशाकारं भव्यमिति सम्बन्धः । अयं भावः—

“ किं धनैर् धनदैर्वा किं कामैर्वा कामदैरुत ।

मृत्युनाग्रस्य मानस्य जन्मभिर्वात कर्मभिः ” ॥

इति प्रोक्तरीत्या, नित्यसन्निहितमृत्योः पुंसस्त्वग्वसाधनत्वेनाभिमितानां कामानां तत्साधना-
नामर्थानां तत्साधनानां कर्मणां च साङ्गानां वस्तुतो दुःखसाधनत्वमिति न धर्मार्थिकामाः
प्रार्थनीयाः । जीवनं चाप्रार्थितैरपि प्रारब्धकर्मोपनतैरर्थकामैर्भविष्यतीति । तथा च
स्मृतिः—

“ नाभुक्तं क्षीयते कर्म कलत्रकोटिशतैरपि ।

अवश्यमनुभोक्तव्यं कृतं कर्म शुभाशुभम् ” ॥

इति । ननु परिनिष्ठितभक्तेः पुंसस्तत्त्वज्ञत्वेन निवृत्ताविद्यत्वात् न तन्मयानि कर्माण्यवशिष्ये-
रन् । उक्तं चोर्गुणायेन

“ ज्ञानाग्निस्सर्वकर्माणि भस्मसात्कुरुते ”

इति । तत्कथं तद्देहस्य प्राचीनकर्मानुरूपा वृत्तिस्मादिति चेत्, मैवम् । एतद्देहार-
म्भकं प्राचीनं कर्मेत्युक्तोत्तरत्वात् । कोऽस्य कर्मणो विशेष इति चेत्, विद्योपजीव्यत्वमिति
ब्रूमः । नो खल्वपवरकान्तस्तमोऽपहस्तयन्प्रदीपस्स्वाधारच्छायात्मकं तमोऽपहस्तयति ।
विपक्षे विदुषः सद्यो देहपाताद्विद्यासम्प्रदायविलयः प्रसज्येत । तस्मात् परिपूर्णभक्तेरपि पुंसः
प्रारब्धकर्मणा मुक्तेषुवदविश्रान्तवेगत्वात् पूर्वकर्मानुरूपमिति साधूक्तम् । तथाच श्रुतिः—

“ तस्य तावदेव चिरं यावन्न विमोक्ष्ये अथ सम्पत्स्ये ” ।

इति । पञ्चमो वेदश्च—

“ देहो हि दैववशगः खलु कर्म यावत् स्वारम्भकं प्रति समीक्षत एव सासु ।

तं सप्रपञ्चमधिरूढसमाधियोगः स्वाप्नं पुनर्न भजते प्रतिबुद्धवस्तु ” ॥

इति । किं तर्हि प्रार्थनीयमित्याह—एतदिति । यद्वा दुःखव्यासेऽपि विषये सुखवैमुख्यं न कार्यं न खलु सकलङ्कादपि कलाधीशादुद्विजते लोक इत्याह—एतदिति । यद्यपि सुखत्वाद्विषयसुखमपि प्रार्थनीयं तथाप्येतद्वक्ष्यमाणलक्षणं सुखं मम नित्यानित्यवस्तु-विवेकादिमतः प्रार्थ्यं प्रार्थनार्हं बहुमतं पूर्णतया निर्णीतं निरतिशयसुखत्वाच्च खलु मत्तकाशिनीसम्भोगसुखमपहाय गर्दभीयभनमगर्दभोऽभिलषेत । एतदिति परामृष्टमर्थ-माह—“जन्मजन्मान्तरेपि त्वत्पादाम्भोरुहयुगगता निश्चला भक्तिरस्तु” इति । मद्भजनस्यैव कर्तव्यत्वे कुतो विषयसेवामपहाय मम सेवामेव सर्वे न कुर्वन्तात्यत उक्तम्—ममेति । नित्यानित्यसुखविवेकाभावादिति भावः । यद्वा यदि निरतिशयसुखात्म-कत्वाद्भक्तिं कामयसे, कुतस्तर्हि तव तल्लक्षणे माक्षे विद्वेषः इत्यत उक्तम्—ममेति । यद्यपि भक्तिमुक्त्योस्तुल्ययोगक्षेमता, अखण्डानन्दानुभवमयत्वात् तथापि पुंसां रुचिर्वैचित्र्य-नियमान्मम भक्तिविषयैव प्रार्थना न दोषायेति भावः ॥ अत्रैतदवधेयम्—मुक्तिर्नाम विधोत्पत्तिस्थितिसंहारहेतुत्वोपलक्षितस्य सच्चिदानन्दैकरसमूर्तेर्ब्रह्मणस्तत्त्वमस्यादिमहावाक्य-प्रमाणकः प्रत्यक्चिन्मात्रतासाक्षाद्बोधः, भक्तिः पुनरीश्वरनिष्ठनिरतिशयबहुमानविश्वासयोरा-त्मनिष्ठनिरतिशयप्रेम्णः चाखण्डब्रह्मात्मपर्यवसिततया तत्समसमयाभिव्यज्यमानो रोमहर्षा-श्रुपातमुखविकासदिलिङ्गकः कश्चनापूर्वदर्शनो मानसोल्लासो योऽसौ नित्यनिरतिशयप्रीत्यावि-र्भावापरपर्यायो भवतीत्यतोऽनयोरेकनिमित्तत्वात् एककालत्वादेकाधिकरणत्वादेकविषयत्वाच्च वस्तुत एकरूप्यं व्यवहारतश्च भेदः, तेनात्वेच्छाविकल्पो युक्ततरः अन्यतरसिद्धाव(परस्याव)-श्यम्भावादिति । तथाच पुराणोपनिषत्—

“भक्तिः परेशानुभवो विरक्तिरन्यत्र चैतत्त्रिकमेककालम्” ।

इत्येतदभिसन्धाय च श्रीमान् स्तोत्रावलीकारः प्रावोचत्—

“त्वमेवात्मेन सर्वस्य सर्वश्चात्मनि रागवान्”

इति

“स्वभावसिद्धां त्वद्भक्तिं ज्ञानयज्ञञ्च(?)येऽर्जुन

भक्तिलक्ष्मीसमृद्धानां किमन्यदुपयाचितम् ॥

एनया वा दरिद्राणां किमन्यदुपयाचितम्” ॥

इति । जन्मान्तरेपीत्यपिशब्दादस्मिन् जन्मन्यपीति प्रोक्तम् । निश्चला भक्तिर्निरुपा-
धिको नित्यनिरतिशयप्रीतिरूपा ; उपाधौ सति तद्विनाशे भक्तेरपि विनाशान्नैश्वर्यं न
सिद्धयतीति ॥ ३ ॥

एवमपीह चिरजीवनमन्त ऊर्ध्वलोकप्राप्तिश्चेत्युभयमभ्यर्थनीयमित्यत्राह—

दिवि वा भुवि वा ममास्तु वासो

नरके वा नरकान्तक ! प्रकामम् ।

अवधीरितशारदारविन्दौ

चरणौ ते मरणेऽपिचिन्तयानि ॥ ४ ॥

दिवि वेति । नराणां कं वैषयिकमुखं तस्यान्तमवसानं तरतमभावेनोपलभ्यमान
स्यास्य विश्रान्तिभूमिस्तच्च तत् कं मुखं च नरकान्तकं तत्र सम्बोधनं नरकान्तके निस्सीम-
सुखात्मन्नित्यर्थः “ एतस्यैवानन्दस्यान्यानि भूतानि मात्रा मुपजीवन्ती ”ति श्रुतेः ।
यद्वा प्राप्तस्वर्गाधिपत्यस्येन्द्रस्याप्युपद्रवकर्तुर्नरकनाम्नोऽयुरवीरस्य शिरश्छेत्ता नरकान्तकस्तस्य
सम्बोधनं तथा । अथवा नरको दण्डस्थानत्वात् संसारः तस्य सनिदानस्य संहर्ता तथोक्तः
“ तेषामहं समुद्धर्ता मृत्युसंसारसागरा ” इति स्मृतेः । अनेन सम्बोधनेन त्वदपित-
मनसां नित्यतृप्तत्वाच्चया नित्यनिरस्तदुःखत्वाच्च भूतरकलोकावपि स्वर्लोकाविति न
विशेषतः स्वर्वासस्तैरभ्यर्थनीय इति वा । शतमखपदप्राप्तावप्यपरिचितार्थत्वादनन्तमित-
भयत्वाच्च नरकवत् स्वर्गोपि त्याज्य इति वा सूच्यते । मम दिवि, अग्निलोकादिव्रह्म
लोकान्ते ; “ स एतं देवयानं पन्थानमासाद्याग्निलोकमागच्छति स वायुलोक स वरु-
णलोकं स आदित्यलोकं स इन्द्रलोकं स प्रजापतिलोकं स ब्रह्मलोकं ” इति श्रुतेः ।
भुवि, मनुष्यलोके वा, नरके यमलोके वा । यद्वा दिवि देवयोन्यष्टके भुवि मनुष्ययोनौ
नरके पश्वादिस्थावरान्तयोनिपञ्चके प्रकामं यथाभिलषितं क्षणं चिरं वा क्षणेन दुःखेन वा
जडतया अजडतया वा वासोऽस्तु । अतिसर्जने लोट् । तत्र प्रकारविशेषाग्रहो मया विसृष्ट
इत्यर्थः । किं तर्हि विशेषतः कामयस इत्याह—ते तव तत्त्वमसिवाक्यार्थभूतसदानन्द-
चिद्धनब्रह्मात्मनश्चरणौ तत्त्वपदार्थौ चिन्तयानि । प्रार्थनायां लोट् । तच्च सदेत्याह—
मरणेऽपीति । अपिजीवनसमुच्चये पूर्वोत्तरकालसमुच्चये वा ; चिन्तनं नाम जीवेशयोरन्योन्य-

स्वरूपानुप्रवेशपर्यवसानतया यथाश्रुतं विमर्शः ‘ त्वं वा अहमस्मि भगवो देव ते अहं वै त्वमसीति ’ श्रुतेः, उपपत्तेश्च विश्वसर्गादिकर्ता कोऽप्यचिन्त्यमहिमा देवोऽस्ति ; सचैकः सर्वेश्वरत्वस्यानेकत्र विश्रान्त्ययोगात्, वयन्तु तत्सृष्टिमध्यपतिता विश्वयन्त्रवाहकस्य तस्य [वशं] वशवर्तिनोऽनन्तरूपा इत्येतत् पामरा अपि जानन्ति । यथाहुः “ कारवोपि तं विश्व-
कर्मेत्युपासत ” इति । श्रुतिश्च—

“ उतैनं गोपा अदृशन्नदृशन्तुदहार्यः ” ।

इति । ये पुनरिहेश्वरो नास्तीति प्रलपन्ति तेऽपि तत्प्रसिद्धिं निरात्मवादिन इव साधयन्ति ।

“ लब्धरूपे क्वचित् किञ्चित् तादृगेव निषिद्ध्यते ’ ।

इति न्यायात्, सर्वविधिनिषेधयोः परमेश्वरादन्यस्य कर्तृत्वासम्भवात् स्वयमेवेश्वरत्वप्रसक्तेश्च ।
तदुक्तं भट्टपादैः—

“ यदीयशक्त्यनाविष्टं जगत्स्पन्दितुमक्षमम् ।

युक्तिभिस्तमपह्नोतुं कदशक्तः परमेश्वरम् ” ॥

इति ॥ श्रीपद्मपादैश्च—

‘ य एव निराकर्ता स एवात्मेति प्रसङ्गात् ’ ।

इति । अतो जीवेशमेदो न श्रुत्या प्रतिपादयितव्यः । ज्ञातार्थज्ञापकत्वलक्षणस्य तत्प्रति-
पादने सिद्धेः ; चेतनादन्यत्वेनान्यतरस्याचेतनत्वापत्तेः जीवस्येश्वरभयानिवृत्तेश्च
तदुक्तम्—

“ नानार्थमात्मनो यावत् पारतन्त्र्यं तदैव हि ।

यावदस्यास्वतन्त्रत्वं तावदीश्वरतो भयम् ” ॥

इति ॥ श्रुतिश्च—

‘ द्वितीया द्वै भयं भवतीति ’ ; “ द्वासुवर्णा स युजासखाया ”

इति श्रुतिलोकप्रसिद्धभेदानुवादेन महावाक्यार्थभूताभेदप्रतिपादनपरा । अन्यथा उपक्रमोप-
संहारादिषड्विधतात्पर्यलिङ्गविरोधादिति । चरणयोश्शोधिततत्त्वंपदार्थतामाह—अवधीरी-
तशारदारविन्दाविति । अपधीरिते स्वशोभया धिक्कृते शरक्कालीने अरविन्दे याभ्यां तौ
तथोक्तौ ; केयं तयो श्शुद्धिर्नाम—उभयैक्यविरोधिरूपस्य ब्रह्मणि परोक्षत्वदूरस्थत्वादेरात्मन्य-
नेकत्वदुःखित्वादेश्च दृश्यत्वे दृगसम्बन्धाददृश्यत्वे दृग्मात्रत्वाच्छून्यत्वाद्वा व्युदसनेन पदा-
भ्यामद्वितीयापरोक्षचिन्मात्रपरिग्रहः । ॥ ४ ॥

अत्र प्रथमश्लोकेनाविस्मृतिस्त्वच्चरणारविन्देऽस्त्विति भक्तिज्ञानप्रार्थनं कृतम् ।
द्वितीयेन नित्यनिरतिशयप्रीतिसाधनभूता भक्तिः प्रार्थिता । तृतीयेन नित्यनिरतिशय-
प्रीतिरूपिणी फलभूता । चतुर्थेन तत्फलभूतस्तत्त्वसाक्षाद्बोधः प्रार्थितः । मुकुन्देत्यादि-
भिस्सम्बोधनैस्सगुणस्य हरेस्साक्षात्कारो व्यञ्जितः ॥

अथ भक्तिज्ञानफलभूता निश्शेषदुःखनिवृत्तिनिरतिशयानन्दावामिलक्षणा मुक्ति-
र्द्राभ्यां श्लोकाभ्यां प्रकाशयते । तत्वादौ निश्शेषदुःखनिवर्तकत्वं भक्तेराह—

करचरणसरोजे कान्तिमन्नेत्रमीने

श्रममुपि भुजवीचिव्याकुलेऽगाधमार्गे ।

हरिसरसि विगाह्यापीय तेजोजलौघं

भवमरुपरिखिन्नः खेदमद्य त्यजामि ॥ ५ ॥

करचरणेति । ‘स्याद्रूपकमभेदो य उपमानोपमेययोरि’ त्युक्तलक्षणं रूपकमत्राल-
ङ्कारः । भवमरुपरिखिन्नः संसारतापसन्तप्तसर्वाङ्गोऽहमद्य तत्प्रसादोदये हरिसरसि
तापनिवर्तकत्वादाह्लादजनकत्वात् पावनत्वात् प्रसन्नगम्भीरत्वात् ब्रह्माण्डबुद्बुदनिकुरुम्बनि-
रन्तरत्वात् सर्वसाधारणत्वात् श्यामलवर्णत्वाच्च हरिरिव सरो हरिसरस्तस्मिन् विगाह्य मनो
विलाप्य तेजोजलौघं तेजः कान्तिपूरः तत्त्वसाक्षाद्बोधो वा तच्च तज्जलञ्च तेजोजलं हृद्य-
त्वसाम्यात्तस्यौघः प्रवाहः अविच्छेदेन वर्तनात्तमापीय अनुसृत्यात्मसात्कृत्य वा खेदं सांसा-
रिकं दुःखं त्यजामि । सरस्त्वमुपपादयितुं विशेषणानि । करचरणसरोजे कराश्च
चरणौ च करचरणं तत् एव सरोजानि यस्मिन् तस्मिन्, कान्तिमन्नेत्रमीने कान्तिमती
अनिभिषत्वकरुणरसार्द्रत्वदैर्घ्यादिगुणयुक्ते नेत्रे एव मीनौ यस्मिन् तस्मिन्, श्रममुपि

श्रमं संसारतापं मुष्णाति भक्तैरज्ञातमेव हरतीति श्रममुद् तस्मिन्, भुजवीचिव्याकुले
भुजशब्दान्मणिबन्धादधोभागो गृह्यते । भुजा एव वीचयः तरंगा भुजवीचयः । अनि-
वार्यवेगत्वसाम्यात्ताभिर्व्याकुले व्यासे, अगाधमार्गे अगाधोऽतलस्पर्शोऽदृष्टावधिको मार्ग-
स्स्वरूपं यस्य तस्मिन् ॥

“ नते विष्णो जायमानो न जातो देवमहिम्नः परमन्तमापे ”ति मन्त्रवर्णात्

“ भ्रान्त्वा भ्रान्त्वा यदन्तस्त्रिभुवनगुरुरप्यब्दकोटीरनेका

गन्तुं नान्तं समर्थो भ्रमर इव पुनर्नाभिनालीकमूलात् ।

उन्मज्जन्निर्जितश्रीस्त्रिभुवनमपरनिर्ममे तत्सदृक्षं

देहाम्भोधिस्स देयो निरवधिरमृतं दैत्यविद्वेषिणो नः ” ॥

इति श्रीभगवत्पादीयवाक्याच्च निर्मलनिस्तरंगसंविदानन्दमुधारणवाविर्भूतां शुद्धसत्त्वगुणमय-
मायाविरचितमहदादित्वग्रामोपार्जितविग्रहात्रीरदावदाताकारात्रीरजायमानमुखमण्डलीना -
यमाननयनयुगलां किरीटतटनिविष्टमुस्पष्टमरीचिमन्मगा(हा)नायकमणितरणिकरनिकरविर -
चित्तविकासमुखकमलविगलद्वीक्षणाभूतधारासम्पातपरितुष्यत्परमहंसपरम्परापरिगीयमानास्वा-
द(दां) वेदाननसन्देहावधारणक्षणकुतुककर्णमुभगां मकरयुगलीमधुरपु[र]मणिकुण्डलो-
सास्तृक(त)गण्डभूमण्डलां तिलमणीवकमन्थरघोणाग्रमुक्तामणिशशिकरनिकरनीराजितवदन-
लक्ष्मीमन्दहासहसितकुन्देन्दुमन्दारमन्दाकिनीनीरकुशेशयकाशशोभां आशाविलासिनीसीमन्त-
सिन्दूरायमाणाधरमणिकिरणसरणिसमुदयामुदितयौवनां कम्बूदरमन्थरकन्थरां वारिजगदाविद्यो-
तमानबाहुदण्डषण्डां अम्लानसुरतरकुसुमकिसलयकलितकमनीयाकारसुरभितरवनमालालीन-
मधुसेवासमुन्मिषितमदमधुरकञ्जाररवोत्करवेदसारविद्रावितान्धकारांङ्कुरसुरासुरमुनिमहोरग-
गन्धर्वाप्सरोगणनिषेव्यमाणनिकटभूमिकां आलोलमुक्ताहारपरिष्कृतोरःस्थलविलसच्छ्रीवत्सकौ-
स्तुभकलशाम्बुधिकन्यकाकल्पितानल्पवैभद्रा(वा)मभद्रभञ्जिनीं तप्तकाञ्चनसञ्चितकाञ्चीकलापा-
बद्धपीतदुकूलपरिहितनितम्बबिम्बां ऐरावतपुष्करसदृक्षोरुकाण्डां आखण्डलललनालोकमण्डनो-
पकरणमणिदर्पणदर्पापहजानुमण्डलमनोज्ञां मनोभवशरधिरुचिरजंघां जह्नुसुताजलनिर्णेजित-
चरणमणिनूपुरारवपराकृतपरिजनामङ्गलां मङ्गलाङ्गीं गीर्वाणगणनायकमौलिमणिघृष्टांघ्रिपीठां
भागवतीं मूर्तिं पादारविन्दान्मन्दस्मितपर्यन्तं पुनः पुनः ध्यात्वा चित्तमैकाग्रीकृत्यान्ते तामपि

चित्तबल्लिशतया परित्यज्य सदानन्दचिद्वधने स्वात्मन्येव भगवति मनो विष्ठाप्य निरस्तनिखिलदुःखो भवामीत्यर्थः ॥ ५ ॥

अथ भक्ते निरतिशयसुखापादकत्वमाह—

सरसिजनयने सशङ्खचक्रे

मुरभिदि मा विरमस्व चित्त रन्तुम् ।

सुखतरमपरं न जातु जाने

हरिचरणस्मरणामृतेन तुल्यम् ॥ ६ ॥

सरसिजेति । हे चित्त मुरभिदि मुराग्व्यामुरसंहरणेन स्वचरणशरणलोकपालके पुण्यपापपाशसहस्रैराबध्य महतामपि परमोपद्रवकारिणो देहाभिमानस्य मूलाज्ञानभेदनद्वारा भेत्तरि वा रन्तुं पादसरोजादिमन्दहासावधि भूयो भूयः स्मृतिं प्रवर्तयितुं चिदानन्दविग्रहे तस्मिन् विलीय स्थातुं वा मा विरमस्व औदामीन्यं मा कृथाः नित्योद्योगं गच्छेत्यर्थः । कोऽसौ मुरभिदिति, तल्लक्षणमाह—सरसिजनयने, सरसिजे इव नित्यसुभगे नयने यस्य तस्मिन् ; सशङ्खचक्रे, उपलक्षणमेतत् ; शङ्खचक्रगदाब्जसहिने

“ वन्दे तं देवकीसूनुं सद्योजातन्धु(तेन्दु)सप्रभम् ।

पीताम्बरं करलसच्चक्रशङ्खगदाम्बुजम् ” ॥

इति मुकुन्दाष्टादशाक्षरध्यानसूत्रात् । अत्रैव रतेः कार्यत्वे हेतुः सुखतरमिति । जातु कदाचिदपि हरिचरणस्मरणामृतममृतत्वफलत्वात् सुमधुरत्वाच्च तेन तुल्यरूपं वस्तु सुखतरमतिशयेन सुखप्रदं न जाने । ‘ स एष रसानां रसतम ’ इति श्रुतेः परमानन्दरूपं परमात्मा मुख्यो रसस्तेन तत्स्वरूपानुभूतेरभ्यधिकं परमनिर्वृतिप्रदं किञ्चिन्न सम्भवतीति भावः । यद्वा—देवतान्तरभक्तेरपि मुक्तिहेतुत्वश्रवणान्न मुरभिदेकनिष्ठत्वं चित्तस्य प्रार्थनीयमित्यत उक्तं—सुखतरमिति । हरिचरणस्मरणमेव यदमृतं अमृतत्वसाधनं तेन तुल्यमपरं सुखतरं साक्षादमृतत्वसाधनं जातु न जाने ।

“ स्वधर्मनिष्ठदशतज्जन्मभिः पुमान् विरिञ्चतामेति ततः परं हि माम् ।

अव्याकृतं भागवतोऽथ वैष्णवं पादं यथाहं विबुधैक(?)त्यये ” ॥

इति श्रीरुद्रगीताप्रामाण्यात् ब्रह्मरुद्रभक्तेर्विष्णुभक्तिद्वारेणैव मोक्षहेतुत्वं, विष्णुभक्तेस्तु साक्षादित्याशयः ॥ ६ ॥

यस्माद्विवि वा भुवि वेत्युक्तगत्या हरिभक्तानां नरकोऽपि स्वर्लोकायते तस्मान्नरक-भयपरिजिहीर्षुभिर्हरिभजनमेव कार्यमित्याह—

मा भैर्मन्द ! मनो ! विचिन्त्य बहुधा यामीश्चिरं यातनाः

नामी नः प्रभवन्ति पापरिपवः स्वामी ननु श्रीधरः ।

आलस्यं व्यपनीय भक्तिसुलभं ध्यायस्व नारायणं

लोकस्य व्यसनापनोदनकरो दासस्य किं न क्षमः ॥ ७ ॥

मा भैरिति । ‘मभैरित्याययुर्द्वेत’ मित्याद्यार्पणप्रयोगदर्शनात् सिजभावो न दुष्यति। हे मनः ! मन्द ! अनर्थसन्ततिचिन्तापर ! चिरं दीर्घकालं यामीः यमकर्तृका यातनास्तीव्रवेदनाः बहुधा असिपत्रवने छेदादिभेदेन विचिन्त्य मा भैर्मा भैषीः । ननु नियमेन पुण्यस्यानुष्ठातु-मशक्यत्वात् स्वभावबलात् पापस्यानुष्ठाननिश्चयाच्च कथं प्रबलतरेषु यमकिङ्क्रेषु पशुवत् पाशं कण्ठे कृत्वाऽऽकृष्य सरभसमतिरोद्रेण मार्गेण यातनास्थानं प्रापयिष्यमाणेषु तस्मर्तुर्भया-न्निवृत्तिरित्यत आह—अमी शास्त्रप्रसिद्धाः पापरिपवः पापाः पापकारिणः तेषां रिपुवत्ती-व्रदण्डकर्तारो यमकिङ्कराः । तथाच शास्त्रं—

‘उरूणसावमुत्तृपा उदुम्बरौ यमस्य दूतौ चरतो जनाननु’ ।

इति । नोऽस्मान् प्रति न प्रभवन्ति बलात् गृहीतुमपि न शक्ता भवन्ति दुर्मर्गेण यातना-स्थानं नेतुं नीत्वा दण्डभेदान् कर्तुञ्च किंपुनः । तदुक्तं श्रीमद्विष्णुपुराणे—

“स्वपुरुषमभिवीक्ष्य पाशहस्तो वदति यमः किल तस्य कर्णमूले ।

परिहर मधुसूदनप्रपन्नान् प्रभुरहमन्यनृणां न वैष्णवानाम् ।”

इति । न प्रभवन्तीत्यत्र हेतुः स्वामी ननु श्रीधरः । लक्ष्मीमुरसा धरतीति श्रीधरः । यद्वा-श्रियं ‘अहं ब्रह्मास्मी’त्येवं रूपां स्वरूपानन्दानुभूतिं स्वमहिम्न्येव धारयतीति तथोक्तः ।

१. ‘उरूणसावसुत्तृपावुलुबलौ यमस्य दूतौ चरतोवशाभूभु’—इति तैत्तिरीयारण्यक-पाठः ॥

‘तदात्मानमेवावैदहं ब्रह्मास्मी’ति श्रुतेः । यद्वा श्रियं पारमेश्वरसम्पदं आत्मसात्करोतीति तथा । अथवा श्रियमलौकिकीं गात्रशोभां वहतीति तथा ।

“तमद्भुतं बालकं अम्बुजेक्षणं चतुर्भुजं शङ्खगदाशुदायुधम्”

इत्यादिश्रवणात् । श्रियं क्षीरसागरकन्यकां पाणौ गृह्णातीति तथा । सर्वत्र सर्वदा जयश्रियं धारयतीति वा तथा । ‘जितं ते पुण्डरीकाक्षे’ति मन्त्रवर्णान् । नन्विति प्रसिद्धौ । श्रीधरः स्वामी रक्षिता ननु-स्वभक्तान् हरिस्सर्वत्र सर्वदा रक्षतीति प्रसिद्धमित्यर्थः । तथाच भगवद्वचनम्—

“कौन्तेय ! प्रतिजानीहि न मे भक्तः प्रणश्यति ।

मां हि पार्थ ! व्यपाश्रित्ययेऽपि स्युः पापयोनयः ॥

स्त्रियो वैश्यास्तथा शूद्रास्तेपि यान्ति परां गतिम् ॥”

इति । अयं भावः—

“हरिर्हरति पापानि दुष्टचित्तरति स्मृतः ।

अनिलयापि संस्पृष्टो दहत्येव हि पावकः ॥

सर्वदा सर्वकार्येषु नास्ति तेषाममङ्गलम् ।

एषां हृदिस्थो भगवान् मङ्गलायतनं हरिः ॥”

इत्यादिस्मरणात् श्रीहरिस्मरणपराणां पापमेव न सम्भवतीति यमस्तत्किङ्करा अपि तेषां मनुकूला एव स्युः प्रतिकूला न भवन्तीत्येव न परम् । अतो यमलोकोपि तेषामिन्द्रलोकायत इति । कथं पुनर्हरिदासता स्यादित्यत्राह—आलस्यमौदासीन्यं स्वाभाविकमपि व्यपनीय नियमेन त्यक्त्वा नारायणं नारो जीवसमूहः तस्यायनमाश्रयः पारमार्थिकरूपं वा नारायणम् । यद्वा—नरिष्यतीति नरः परमात्मा तस्माज्जातानि महदादिधरण्यन्तानि तत्त्वानि नाराणि तान्येवायनं कार्यकारणान्वयन्यायादभिव्यक्तिस्थानमस्येति तथा तं ध्यायस्व । ननु तद्वक्तृत्वस्य वैदिकत्वे नानेकनियमसापेक्षस्य न सुकरत्वमित्यत उक्तम्—भक्ति-सुलभमिति । सुखेन लब्धुं शक्यः सुलभः भक्तिः तस्मिन् परा प्रीतिस्तथा सुलभो भक्ति-सुलभः तं भगवदौन्मुख्योदयमात्रमत्र निमित्तं न द्विजत्वविद्वत्त्वादीत्यर्थः

“ न रोचयति मां धर्मो न सांख्यं योग उद्धव ! ।

न स्वाद्ध्यायस्तपस्त्यागो नेष्टापूर्तं न दक्षिणा ॥

व्रतानि यज्ञाः छन्दांसि तीर्थानि नियमा यमाः ।

यथाऽवरुद्धेन्मत्संगस्सर्वदुःखापहो हि मां ॥”

इति श्रीभागवतवाक्यात् । कुतः पुनर्हरेर्दाससंरक्षणशक्तिर्निश्चितेति ; श्रुतार्थापत्तिरित्याह—लोकस्य स्वप्नसङ्गविवर्जितस्याजामिळव्याधादेरपि व्यसनापनोदनकरस्साङ्केतिकस्वनामतदंशोच्चारणवशात् परिहृतानर्थपरम्परोऽसौ दासस्य दीयतेऽस्मै स्वामिना सर्वमभिलषितमिति दासः स्वपादैकशरणः तस्य व्यसनापनोदने किं न क्षमः स्वपादसेवापराङ्मुखानां पापशीलानाञ्च बहूनां जनानां नारायणेति वा नालायणीत्यादिरूपेण वा पुत्रजायाद्याह्वानबुद्ध्या समस्तस्याऽसमस्तस्य वा स्वनाम्नो मरणकाल उच्चारणादखिलानर्थपरिहरणं श्रूयमाणमेकस्य स्वांभिमात्रशरणस्य साधोर्यथाशक्ति नामसङ्कीर्तनादिकर्तुंश्च पुंसो नरकभयभञ्जनासामर्थ्ये भगवतो नोपपद्यत इत्यर्थापत्तिरत्र दर्शिता । तदुक्तम्—

“ एतावतालमघनिर्हरणाय पुंसां सङ्कीर्तनं भगवतो गुणकर्मनाम्नाम् ।

विक्रुश्य पुत्र ! मघवान् यदजामिळोपि नारायणेति त्रियमाण उपैति मुक्तिम् ॥”
इत्यादि ॥ ७ ॥

अत्यल्पमिदमुच्यते ; हरिस्स्वदासानां नरकभयमपनुदतीति यावता संसारभयमप्यसौ हरत्येवेत्याह—

भवजलधिमागधं दुस्तरं निस्तरेयं

कथमहमिति चेतो मा स्म गाः कातरत्वम् ।

सरसिजदृशि देवे तावकी भक्तिरेषा

नरकभिदि निषण्णा तारयिष्यत्यवश्यम् ॥ ८ ॥

भवजलधिमिति । हे चेतः ! अगाधमतलस्पर्शमपरिच्छेद्यस्वलक्षणं दुस्तरमपारं भवजलधिं जन्मादिसंसारसागरं कथं केनोपायेन निस्तरेयमहमिति विचिन्त्य कातरत्वं भीरुत्वं मा स्म गाः अवश्यं मा गाः । कस्तर्हि तन्निस्तरणोपाय इत्याह—नरकभिदि निषण्णा तद्विषया

एषा निरुपाधिकी तावकी त्वत्कर्तृका भक्तिस्त्वामवश्यं तारयिष्यति । भवजलधेरिति शेषः । कोऽसौ नरकमिदित्यत उक्तं—देव इति । ‘ एको देवस्सर्वभूतेषु गूढ ’ इति श्रुतिप्रसिद्धः स्वप्रकाशचिद्रूपः प्रपञ्चसर्गादिक्रीडाकर्ता स्वात्मनि कर्तृत्वभोक्तृत्वाद्यनर्थप्रवर्तिकां मायां जेतुमिच्छन् वा परमात्मेत्यर्थः । निरुपाधिके परेऽद्वितीयत्वान्न भक्तिसम्भव इत्यत उक्तं—सरसिजदृशीति । सरसिजे इव दृशौ यस्य तस्मिन् सोपाधिक इत्यर्थः । अत्र चेतश्शब्दादन्तःकरणमणिदर्पणप्रतिबिम्बितचिन्मूर्तिजीवो विवक्ष्यते ; अतो न बन्धमोक्षविरोधः ।

“ ये तु सर्वाणि कर्माणि मयि सन्यस्य मत्पराः ।
अनन्येनैव योगेन मां ध्यायन्त उपासते ।
तेषामहं समुद्धर्ता मृत्युसंसारसागरात् ॥ ”

इति भगवद्गीतां हृदि निधाय अवश्यपदप्रयोगः ॥ ८ ॥

नन्वेवं भक्तेरतिशयेनाभ्यर्थनीयत्वे कुतस्सर्वेऽपि पुमर्थार्थिनस्तत्रैव न प्रवर्तन्त इत्या-
शङ्क्य विषयाभिषङ्गदोषदूषितधिषणत्वादिति परिहारं मनसि निधाय वैराग्योदयद्वारेण सर्वेषां
नृणां विष्णुभजनेच्छाविर्भावमभ्यर्थयते—

भवजलधिगतानां द्वन्द्ववाताहतानां
सुतदुद्धितकलत्रत्राणभारार्दितानाम् ।
विषमविषयतोये मज्जतामप्लवानाम्
भवतु शरणमेको विष्णुपोतो नराणाम् ॥ ९ ॥

भवजलधिगतानामिति । भवो गर्भगृहवासादिमरणान्तः संसार एव जलधिर्भवजलधिः
भवजलधेरनवधित्वात् सत्त्वसंघोषबृंहितत्वात् भीषणत्वाच्च तत्र गताः पतितास्तेषां तत्रापि
नराणां स्वर्गापवर्गद्वारभूतं मानुषन्देहं प्राप्तानां । तदुक्तं—

“ नृदेहमासाद्य सुदुर्लभं प्लवं महत्सुकल्यं गुरुकर्णधारम् ।
मयाऽनुकूलेन नभस्वतेरितं यो वै भवाब्धिं न तरेत् स आत्महा ॥ ”

इति ;

“ लब्ध्वा सुदुर्लभमिदं बहुसम्भवान्ते मानुष्यमर्थदमनित्यमपीह धीरः ।

तूर्णं यतेत न पतेदनुमृत्यु यावन्निश्रेयसाय विषयः खलु सर्वतस्स्यात् ” ॥

इति च । एकः प्रधानो ‘ न तत्समश्चाभ्यधिकश्च दृश्यते ’ इति श्रुतेः अद्वितीयो वा एको देव इति श्रुतेः “ एक एव तु भूतात्मा भूते भूते व्यवस्थितः । एकधा बहुधा चैव दृश्यते जलचन्द्रव ” इति स्मृतेश्च । विष्णुपोतः ‘ आत्मा हि विष्णुस्सकलस्य जन्तो ’ इति वचनात् विष्णु व्याप्ताविति स्मरणाच्चानवच्छिन्नचिदात्मा सर्वान्तर्यामी विष्णुस्स एव पोत उड्डुपापरपर्यायो विष्णुपोतः । तदुक्तं—

“ स्वयं समुत्तीर्य सुदुस्तरं द्युमद्भवाम्बुधिं भीममदभ्रसौहृदाम् ।

भवत्पदाम्भोरुहनावमात्रकं निधाय यातास्सदनुग्रहो भवान् ॥ ”

इति । शरणमाश्रयो रक्षिता वा भवतु । ननु तेषां यज्ञादिधर्मोऽस्ति शरणं ‘ अपा-
मसोमममृता अभूमे ’ इति श्रुतेस्तत् किं विष्णुपोतेनेत्यत उक्तं—अपुवानामिति ।
नासौ मुख्यः प्लवो यो धर्मलक्षणः । ‘ प्लवा ह्येते अदृढा यज्ञरूपा ’ इति
श्रुतेः कर्मणामविद्यामयत्वेन तन्निवर्तकत्वायोगात् क्रियासाध्यत्वे मोक्ष[स्य]-
सुखस्य विषयमुखवदन्तवत्त्वापत्तेश्चेत्याशयः । तेषां प्लवप्रार्थनौचित्यसिद्धये विशेषणानि ।
द्वन्द्ववाताहतानां द्वन्द्वानि कामक्रोधादीन्येव वातास्तत इतः क्षेपकत्वसाम्यात्
‘ कामक्रोधोद्धवं वेग ’ इति स्मृतेः तैराहतानां पीडितानां सुतदुहितृकळत्राणभारार्दितानां
सुताश्च दुहितरश्च कळत्राणि च सुतदुहितृकळत्राणि तेषां त्राणं रक्षणं सचासौ भारश्च
तेनार्दितानां विवशीकृतानां ; अत एव विषमविषयतोये विषमाः क्षणिकत्वसातिशयत्वबहु-
प्रयासलभ्यत्वादिभिर्दुःखबहुला विषयास्सक्चन्दनवसनान्नादय एव यत्तोयं तस्मिन् मज्ज-
तामाविष्टचित्तानां । लोके हि दैवात् समुद्रमद्ध्ये पतितानां महता भारेण युक्तानां
महावातेन हन्यमानानां कल्लोलमालाकुले महति तोये मुहुर्मज्जतामुन्मज्जतां च विनष्टप्लवानां
वणिकजनानां कारुणिकेन पुरुषवरेण प्लवोऽन्वेषणीयो भवतीति भावः । अयमत्र विवक्षि-
तोऽर्थः दैवात् लब्धमनुष्यदेहा देहिनस्सर्वे विवेकभाजो भूत्वा पुत्रपुत्रीकळत्रादिभिस्सह क्षण-
भंगुरानन्ततो दुःखनिवहहेतून् विषयान् विसृज्य विष्णुपादाब्जपरा भवन्त्विति ॥ ९ ॥

University Notes

CONVOCATION :—

The first Annual Convocation for the purpose of conferring degrees was held on Tuesday, the 27th October, 1931, and was presided over by His Excellency the Rt. Hon'ble Lt.-Col. Sir George Frederick Stanley, P. C., G.C.I.E., C.M.G., Governor of Madras, and Chancellor of the University. M.R.Ry. Rao Bahadur S. E. Runganadhan Ayl., M.A., I.E.S., the Vice-Chancellor of the University delivered the Convocation Address which we print elsewhere. The Degree of Bachelor of Arts was conferred on 28 candidates.

* * *

The Vice-Chancellor, Rao Bahadur S. E. Runganadhan, represented the University at the Congress of the Universities of the British Empire, where he took an active and valuable part in the deliberations of the Conference.

* * *

During the year under report, the University was represented by the following members of the Teaching Staff at the several Conferences.

1. Dr. B. V. Narayanaswami Naidu, M.A., B.COM., PH.D., Bar-at-Law.—The All-India Economic Conference at Bombay.
2. Dr. S. S. Sureswar Sen, M.A., D. Litt-et-Phil.—The Indian Philosophical Conference at Patna.
3. Mr. A. Narasinga Rao, M.A. and Mr. S. Sivasankaranarayana Pillai, M.Sc.—The Indian Mathematical Conference at Trivandrum.
4. Mr. C. S. Srinivasachari.—The Bombay Historical Congress.

The following special lectures were delivered during the year.

1. Brahma Sri Mahamahopadyaya Vidya Vachaspathi S. Kuppuswami Sastri, Professor of Sanskrit, the Presidency College
“Highways and Byways of Literary Criticism in Sanskrit”—
Two lectures.
2. Mr. O. C. Gangoli—“Indian Fine Art”—Three Lectures.
3. Professor Sir S. Radhakrishnan—“Religion in the Modern World”—Three Lectures.
4. Dr. B. B. Dey, Professor of Chemistry—“Enzymes”—
Three Lectures.
5. Mr. Lakshmana Sarma—“Health and Hygiene”—Three
Lectures.
6. Mr. M. S. Ramaswami Ayyar—“Music then and now—Land-
marks in the History of Indian Music”—Five Lectures.

7. Mr. S. S. Suryanarayana Sāstrī, Reader in Philosophy, Madras University—"The Illusoriness of the World of Difference; The Relation of the Jiva to Brahman; The Nature of Release: the Place of Happiness in Brahman; The Nature of Release—Jivan Mukthi".—Four Lectures.

* * *

The Regulations embodying the revised courses of study leading to the B.A. and B.Sc. Degrees were passed by the Academic Council and given effect to from the academic year 1931-32.

Provision has been made for instruction in the following subjects under Part III, Optionals of the B.A. and B.Sc. Degree courses:—English, Philosophy, History, Economics, Mathematics, Chemistry, Physics, Sanskrit, and Tamil.

* * *

A unique venture has been made in starting the B.A. (Honours) course in Tamil.

The Syndicate has decided to award a money prize of Rs. 1,000 to the author of the best book in Tamil on 'Logic,' suitable for use in the Intermediate Class.

The appointment of a Telugu Pandit has been sanctioned from the academic year 1932-33, with a view to enabling students to offer that language under Part II of the B.A., and B.Sc. Degree courses.

The Honours course in Chemistry was begun in July last. The only other institution with such a course in the Madras Presidency is the Presidency College, Madras.

* * *

A department of Natural Science (Botany and Zoology) has been started.

RESEARCH DEGREES :—

Two Research Degrees, M.Litt. and M.Sc. have been instituted. The degree will be granted on the basis of a thesis which shall be a record of research carried on at the University for a period of not less than one year in the case of B.A. (Honours) or B.Sc. (Honours) and two years in the case of those with B.A. or B.Sc. Degrees.

* * *

The Rajah Annamalai Music College and the Oriental Pandits' Training College will be incorporated into the University from the academic year 1932-33. The Founder has generously given an endowment for the purpose.

* * *

The rapid extension of the Library is being steadily continued by the authorities, Rs. 48,000 having been sanctioned for the purpose during the past year. The Pro-Chancellor has generously given 806 volumes to the Library.

Higher studies and research have been pursued by the members of the Staff, several papers having been published in various technical and scientific journals. A large number of Extension Lectures have been delivered by members of the Staff.

* * *

The following members were deputed for specialised training :—

The Director of Physical Education to take special training in Indigenous Systems of Exercise at the Madras Shivaji Vyayam Mandal ;

Mr. G. V. Krishnaswami Ayyangar to the Kodaikanal Observatory.

In addition Dr. M. O. Thomas was granted leave to go to England to undergo training in " Library Science course."

* * *

The second ' Founder's Day ' was celebrated on the 13th of October, 1931 when Mr. S. Satyamurthi delivered the address, and Mr. M. Ratnaswami, M.A. (Cantab.), C.I.E. presided.

* * *

Kumara Rajah M. A. Muthiah Chettiar of Chettirad, B.A., M.L.C., has given an endowment of Rs. 1,000, the interest on which is to be utilised annually for a prize.

REVIEWS

Shivaji, the Founder of Maratha Swaraj

By

MR. C. V. VAIDYA

*B. I. S. M. Puraskrita Granthamala, No. 26—Poona, 1931,
published by the Author, at 314, Sadashivpeth,
Poona City—pp. 410—price Rs. 3.*

No great justification is needed for the addition of yet another book on Shivaji's life and its significance. The first-hand sources of information for the subject are still in the process of being sifted and gathered. The Shiva Charitra Kāryālaya and the Bhārata Itihāsa Sanshodaka Mandala of Poona have been doing yeoman service in this matter in recent years. It is, of course, a vexing and difficult task to evaluate the relative values of the different sources, papers, *Khaiṣiyats*, *sanads*, correspondence of the European settlements, Muhammadan writings, etc. The exhaustiveness of the material collected is not, in this subject, more important than the correct and rational interpretation and presentation of the same. Mr. Vaidya, the doyen of the present-day Maratha historians and scholars, holds that the life of Shivaji is best written by an admirer and a country-man of his, who should, however, restrain his impulses and take an impartial attitude in the judging of moral and political justifications. The author thus rightly maintains that the *Bhakarkars* have exaggerated their hero in as large a measure as he has been misrepresented by hostile writers. In this particular, the poetical fulness and richness of the *Shiva-Bharata* is attempted to be reduced to its proper level in the required places. The value of some of its suggestive observations is well brought out; thus, we are told with reference to Shivaji's acquisition of Javali, from an extract from it, that "whoever has Javali has Wai prant, the whole range of Sahayadri and the corresponding sea-coast." The explanation is given for the discrepant dates of Shivaji's birth that the *Bhakarkars* concocted a hero's horoscope for Shivaji, with five planets in the *uchcha*, that the planets were not so in 1630, and they were roughly so in 1627. It is also suggested by the author that, perhaps, the *Bhakarkars*, wrongly caught hold of one of the brothers of Shivaji; but he adds the caution that the controversy cannot be regarded as finally settled, unless evidence is forthcoming of a contemporary character.

The *Muhammad Nāma*, a copy of which was recently discovered by Sir J. N. Sarkar, from the Kapurthala Library, was a contemporary account of Muhammad Adil Shah (1627–1656), and, most likely, one of the sources of the *Basūtinu's-Salātin*, which has been till now regarded as the only good book for the history of the Adil Shahi Dynasty. It has been utilised for the chapter on the imprisonment and release of Shahaji in 1649, as a supplement to the *Shiva-Bharata* and the *Jedhe Sakhavali* and the recent publication of the collection known as the *Shivakālīn-Patra-Sāra Sangraha*. The *Bhakarkars* held, rightly in

the author's estimate, as regards the Afzal Khan affair, that "Shivaji knew what was in his opponent's heart and he knew what was in Shivaji's; and God alone knew what was in the mind of fate" and that destiny declared its decree, though the historian may try to explain the incident with reasons. Mr. Vaidya examines the different versions of Shivaji's surprise attack on Shayista Khan's camp; of these the earliest and the clearest contemporary account is the Rajapur English letter, dated 12th April, 1663; and the story of Grant-Duff's is the last and the strangest version, mainly gathered from the later Bhakarst Professor Pisurlenkar and others have shown, from the letters of the European settlements, that Shivaji was looked upon as an independent monarch even as early as 1663 and his rise had come to be regarded as a Hindu movement. His sack of Surat in 1664 was, on the testimony of the English and Dutch factors of the place, not marked by "needless and excessive" cruelty. Mr. Vaidya would also exculpate Raja Jai Singh of Amber from the charge of having been privy to any pre-planned plot against Shivaji, during the latter's visit to Agra, but would add that it is impossible to state definitely that he was honest (p. 188). He holds that the descent of the Bhonsles from the Sessodias of Udaipur had always been accepted and there was no necessity for concocting a new Kshatriya pedigree at the time of Shivaji's coronation, as had been suggested by some writers on the basis of the later *Bhakars*. Shivaji had already styled himself *Maharaja* and *Chhatrapati*, ever since his escape from Agra, in important state-documents and *sanads*. Of course one cannot wholly agree with the naive conclusion of the author that the establishment, by Shivaji, of Maratha rule in the Karnatak was completely and easily justified, being an extension of Hindavi Swaraj, though not Maratha Swaraj, nor with the statement that Hindu Marathas had a better right than the Muhammadans and the English to establish their rule in the Karnatak.

It will swell the length of this small review too much, if Shivaji's character, as examined in the book, is to be detailed and criticised; but very few will disagree with the stand-point taken with reference to his capacity, character and good traits. Much has been made of his alleged acts of deceit and treachery; and now the reaction from the previous unfavourable estimate is in full swing. Mr. Vaidya compares him, curiously enough, with Sultan Mahmud of Ghazni, though the accurate studies, recently brought out, of the *Bhūtshikan* Sultan by Messrs. Habib and Nazim will make the reader disagree with the Maratha biographer in the happiness, as well as the propriety, of the analogy he institutes. Making due allowances for justifiable pride and estimates of a favourably disposed temper and understanding, Mr. Vaidya's book sustains the claim that it makes of being a full, patriotic and withal, impartial estimate of the great Maratha Hero. The small blemishes in printing and the peculiar spelling of Mughal and other names adopted, are minor defects which can be removed in a subsequent edition.

Bhoja Raja

BY

PROF. P. T. SRINIVASA AIYANGAR, M.A.,

(*Annamalai University Historical Series, No. I. 1931.*)

Among the older generation of Indian Indologists the late lamented Professor P. T. Srinivasa Aiyangar held a unique place, first as an anthropologist and next as an historian. Author of several books, the learned Professor endeared himself to the scholarly, and even the lay world by his inimitable flowing style, and sometimes by his original and thought-provoking theories. It may be we agree with his views or not. But what the critical student admires in him is his boldness and assertiveness, characteristics of a born researcher. His was not a realm of doubt. To him either a certain thing was a fact or a fiction.

The book under review forms the first of the Annamalai University Historical Series, but, unfortunately, the last of the published works of the late Srinivasa Aiyangar. The subject of this excellent monograph is a critical study of the life and career of that ruler of India, Bhoja of Dhārā, whose heroic valour, coupled with a princely generosity, was a model for kings of all time to follow. The book is divided into ten chapters of which the first three give an account of Mālva and its early history and of the Paramāras. The last two chapters are devoted to an examination of the social and religious life in the times of Bhoja as well as of his monuments. Five chapters deal with the personality, character and achievements of Bhoja. In this study the stand-point of Mr. Srinivasa Aiyangar is that of the historian. Every available source of information, including inscriptions, tradition, and literature has been pressed into service; and in the use of his materials, he has combined discrimination with sober judgment. We are sure that his critical estimate of Bhoja, and a general picture of the eleventh century India, will be found widely acceptable by all students of history. The value of the monograph is much enhanced by a number of plates, of which special mention may be made of the idol of Sarasvatī, enshrined in Bhoja's Temple of Śārāda and the *Sarpa Bandha* (serpentine) inscriptions. The index is copious and useful.

Last, but not least, the book is appropriately dedicated to Rājah Sir S. Rm. Annamalai Chettiar, Kt., the Founder-Pro-Chancellor of the Annamalai University, who has been 'helping the ancient culture of India to keep growing on from more to more.'

V. R. R. DIKSHITAR.

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Is Vedanta a Science of Reality?

By

C. T. SRINIVASAN

(*Annamalai University.*)

I propose to discuss the subject under two headings. The first part will be occupied with the question: "Can there be a science of Reality?" In the second part, the question of Vedanta being a science of Reality will be dealt with at length.

I.

CAN THERE BE A SCIENCE OF REALITY?

We live within the matrix of Nature which we try and hope to understand. How much do we know? What is life? No one knows. It emerges from darkness like a meteor, makes a transient trail and disappears into darkness again. What is Self, this 'I'? I rise from life and merge into life. The rising and merging belong to life as such. But Self includes life within itself and transcends it by overflowing it. It becomes the province of science and philosophy to rationalize the matrix of nature in which we live and act, for the trail of human nature is indeed over all our knowledge. Yet we must not forget that even these rationalisations grow out of tradition and prejudices that we have assimilated into our nature. The present day tendency is to emphasize science as the exclusive method of apprehending Reality. Far be it from me to minimize the importance of science which has so vastly

enlarged our vision of Reality. But the lure of the Abstract is so strong that the little gain is out-balanced by an irretrievable loss of integrity. Scientists and philosophers may hypostasize analyses and classifications into Essences or Ultimate Units. Surely this is only a trick of language, for the so-called Ultimate Units indeed subsist as abstractions in the realm of Thought, where they enjoy a dubious eternity. Nature is not any more real at the level of electrons and protons than at the level of human consciousness. If proton be at the one end the Ultimate of analysis, consciousness is at the other end the Ultimate of synthesis. Nature without spirit becomes mere weather, for it is by Spirit that matter and motion are standardized into patterns, meaningful and beautiful. The analyses of science are pragmatic and do not pretend to give the full implications of the postulates involved. The recent history of science shows too clearly that the scientific constants are pragmatic constants. What science requires is a metaphysical continuum in which, to use Einstein's language, "there are no parts that can be tracked through time." Nature viewed as a whole, does not seem to come into being or likely to pass away. It is self-sustaining and has a definite structure. Over and above the routine of Nature, there is the Creative Genius which spiritualizes Nature and does not emerge in nature's cycles. It has its own individual life of infinite richness and value and "in fullness of time incarnates itself into the flesh of mother earth to produce the kingdoms of beauty, order and value." The patterns might be of the stuff of which dreams are made, but surely, We, the weavers of the patterns, must be something else other than the dream stuff. It is Nature that seems to be rounded up in sleep and not 'We', the creators of values. So much for the complexity of our subject matter.

The term science, no matter to whatever sphere of life or existence it is applied, is currently understood to signify a systematic study and exposition of things and factors that have been, are and yet to be. In its modern usage and acceptance no science can boast of having actually achieved such a happy consummation, although the Ideal of such a perfection is necessarily implied not only by the different sciences of our time but also in our very life and existence. Without such an Ideal no science is worth the name nor life itself worth the pursuit. This urge towards an evergrowing perfection is present in varying degrees of explicitness as aspects of One Universal Life. So long as the manifold aspects and life processes have not been gathered together under a common view-point, life continues to be full of errors, contradictions and pitfalls. Hence science demands not only truths and facts to be accounted for, but also errors and illusions which, though really non-existent factors, have nevertheless been assumed to

be. It is quite logical that a science which explains successfully facts and figures, can also consistently account for error. The very value and function of a science depend upon its capacity to account for the error or ignorance besetting life and to remove such unreal factors by an exposition of the underlying truths. "If truth is not manifest, it must be made manifest, if it is manifest, it must be reached." So long as the basic truth of life is not understood and firmly grasped, life would be covered, as it were, with ignorance and contradictions. The phrase, "grades of Reality" being a misnomer, the differences in sciences are due to the different degrees of Reality emphasized by them. Thus we come to have a hierarchy of sciences based upon the degree of success actually achieved in life.

A science demands as its essentials the following facilities viz., observation, experiment, verification and inference. At the outset we must confess that these facilities are not given to us in their fullest measure. Error as such, is not in the Reality or even in life itself but rather in one or other of the organs and instruments of observation and experiment. Verification and inference themselves could be shown to be defective in one aspect or another and as yet, imperfect in every case. No body seems to be sure of his ground. Newton might have laughed at Ptolemy, but Einstein is making the present generation to laugh at Newton, possibly himself to be laughed at in turn by a future Copernicus. Is this pessimism? Human understanding! It is a frail thing and likely to pass away. Yet it is the only thing that counts for us as the real, and signifies our participation in the realm of nature. But let us not be fooled by our own self-delusions. Human mind has not once sifted out a grain of truth without letting twenty others slip by. In the words of Father Ogniben "Nobody has uttered truth but has presented twenty lies to support it". To see things as they are and understand their limitations are the characteristic marks of a scientific eye.

Further, factors like observation, experiment, inference, etc., are, to a large extent, factors of individual experience. And our ordinary human experience does admit of a variety of contradictions, to wit, unity and differences, freedom and constraint, the eternal and the contingent, the infinite and the finite, etc. Logically speaking these mutual oppositions must themselves be necessarily and eternally cancelling one another. If mutual opposition be the only truth, there would indeed be no truth at all, for truth will be contradicted by error. But without these opposing factors distinctly perceived as such, life or experience could not be possible; and experience is the only factor on which all sciences and knowledge are based and to be guaranteed. Bosanquet

might say that all these contradictions are resolved ultimately in the Absolute. This is putting the cart before the horse. Life alone is the sole repository of both knowledge and ignorance, and it alone can explain the truth of these contradictions. Every scientific problem is a life-problem only. And life contains the one solution of the different oppositions. Thus no science is independent of life, and life embraces all sciences within its fold and is infinitely more than a mere totality of sciences.

With the modern canons of scientific procedure, Reality can never be actually demonstrated, for, we have already pointed out how factors like observation, experiment etc., are not only limited in their scope but inherently defective in their nature and constitution. Let us take observation for example. What we observe seems to be real. But the illusions of the optic centres are too well known. The sun going round the earth seems to be perfectly real so far as the human eye goes. Our dreams and the optic illusions assure us that what is taken to be real, may not be so after all. A true scientific observation requires the whole of Reality including the observing subject as well, to be placed before us as an object for observation. Such a task is futile, for how could the observer be possibly objectified or treated as an object. As Sankara put it beautifully, the cognizer is ever the cognizer and the cognized ever the cognized only, and it is impossible for one to be both the cognizer and the cognized at the same time. This is the law of contradiction. The instruments of our observation, our very eyes and the microscopes, are vitiated by the danger of mal-observation or non-observation. While we cannot absolutely trust our senses, how can we pretend to have been assured by the merely external and artificial though wonderfully constructed and delicate instruments like microscopes, telescopes, stereoscopes etc? Are these instruments really more wonderful, complex or delicate than the human eye? What is not possible for the human eye becomes utterly impossible for the artifices of the human mind. Bertrand Russel put it correctly when he said that we could never be assured whether what we observed through the microscope was really a motion in ether or merely a reflection of a quiver in the retina of the observing eye. So much for scientific observation.

What about experiment? Man is given only one chance to know Truth. A theory of reincarnation might after all be an Oriental balm to the many disappointed and disheartened human souls, but to a scientist nothing more than a belief. The religious dogma does not alter or affect the scientific conception. It is a rational but pious hope that what could not possibly be achieved here and now, we hope to achieve after death or in a rebirth. What I want to emphasize is not the

rationality or the irrationality of the religious doctrine—this is a matter for the priests and *pundits* to fight over—but the tremendous and momentous significance of our present life. Have we really any positive proof or evidence to show conclusively that after death there is a sure return? Hence if any scientific experiment is to be conducted upon Reality, it must be done in the 'present' life, for science does not lie outside life. But experiment requires that the subject doing the experiment must live before, during and after the experiment. In other words the present experimenter must live as he was before birth, and continue to live after death. On the very face of it, it sounds absurd and impossible. Who knows anything of the 'Before' or of the 'Here-after'? Our very limitations and littleness in this ruthless orderly machine of an immense universe seem to mock at our attempts to know Reality as it is. The little blade of a grass seems to scoff at man's vanity and his presumptive claim to wisdom and superiority. In the absence of correct observation and experiment, verification and inference are more or less speculative and dogmatic in character. Hence the reason why the best scientific truth is always open to be proved false and replaced by subsequent or more acute inference *ad infinitum*. The sum of all human endeavours has not even touched the Actual by the fraction of a millimeter. "Ages have past; still Thou pourest and still there is room to fill" (Tagore: Gitanjali.)

We are left on the brink of an abyss ready to be dashed to pieces. Are human existences and endeavours merely the accidents of a ruthless system of coincidences over which we have no control? What is this immense machine of a universe with its laws of evolution, development and growth? Who is its controller or is the controller himself its steering rod and wheel? What is the cause, purpose and the meaning of the whole affair? These must lie within this universe itself, for we cannot have the seed at one place and seek the tree elsewhere. Or is the whole thing a bit of constrained imagination and if so, whose? Hegel says "Reality is already an accomplished fact and does not wait for human cognition or recognition. That it does so wait is the illusion under which we live and have our interest in life." If the evolutionary laws and processes disclosing themselves in manifold ways and existences in Nature are nothing better than hallucinations, human endeavours and aspirations become meaningless and unnecessary. What about science? Its methods, if stretched to their logical limits, leave us between the Scylla and the Charybdis. But the question is "Is Reality so?" The Real in order to be real, must be artistically the most beautiful, morally the perfect and scientifically the most correct or the rational. Hence human endeavours must have their place and meaning within the system of Reality. As Spinoza put it,

if Reality had become the commonest of all things, humanity would not have waited so long for its salvation. The fault then does not and cannot lie in the Real, but only in the different methods we are pursuing. And the methods of modern sciences neither prove nor disprove anything in all the three worlds heaven, earth or hell.

II.

VEDANTA AS A SCIENCE OF REALITY.

As a science, Vedanta alone gives us some hope. It brings before us the whole of our experience for review. There is no mystery or mysticism about the Upanishads. One and all of the Upanishadic seers think that life alone will give the clue to the whole affair. They proclaim truth and also prove by reasoning how it cannot be the whole truth. Thus by viewing and reasoning from different angles of vision we arrive at certain facts. When we bring them all together, we will as a matter of course arrive at the right conclusion. This is the method pursued by Yajnavalkya in the Brihadaranyaka Upanishad. At first it takes the form of an appeal to our ordinary experience and passing judgment upon what is presented in experience as the real or as our immediate sense of the present. Beyond the perpetual and conceptual levels lie the aesthetic, moral and religious factors. These modes of construction are, according to Yajnavalkya, only one phase of the total experience. Sruti also says: "Brahman is four-footed. All this is one foot only, the other three feet are up in the sky."

"Philosophy contemplates experience as a whole and attempts to comprehend it under its scheme. . . . The clue to the nature of a Philosophy lies in the method pursued.¹ There is a fundamental difference between the methods of Vedanta and Western philosophers. Croce, the great Italian 'Actual' idealist, in praising the Indian system says that while the Indian system has everything to do with life and experience, the formal Logic of the West is dry and when applied to human experience is barren of any good result. Mr. Widgery in his recent book on "Contemporary Thought in Great Britain," remarks that in order to appreciate the great conclusions of the Indian Philosophers, modern Philosophers must first get familiar with their peculiar methods. But Hegel thought that he would have nothing to do with a system that landed him nowhere or in the 'Abyss of Brahman' as he called it. Mr. Stace, the author of 'Hegel's Philosophy' calls the system of the Upanishads a 'pseudo-philosophy.' Such contemptuous

1. Dr. Radhakrishnan: *The Reign of Religion in Contemporary Philosophy*.

references are excusable when we consider the peculiar nature of the *Vedic* methods (which they have failed to understand). The great metaphysical '*Vedic*' conclusions are based upon a correct valuation of facts in terms of experience as our great philosophers like Gaudapada, Sankara and Ramanuja have shown in their brilliant commentaries. The '*vedic*' methods and conclusions can be understood only through a clear understanding of those great '*vedic*' scholars who knew how to interpret the Upanishads.

The Western methods could broadly be divided into the empirical and the transcendental. Under the empirical come the positive, physical and physiological sciences and under the transcendental, the aesthetic, the moral and the religious. There is yet a third view which has escaped the attention of the Western philosophers and scientists. This is what is called the '*Avasthaic*' View, and the method of enquiry is commonly called the '*Avasthathrya*' which supplies the key to the understanding of the philosophy of the Upanishads. Till now Western scholars have not bestowed any serious attention on this subject. As this is a metaphysical method it is wrong to suppose, as some of our recent scholars do, that it has anything to do with psycho-analysis. It is not psychology but pure metaphysics, as all psychology is only a science based upon the observation of the enquirer in one state only, i.e., the waking. The method of *Avasthathrya* is a comprehensive view, more comprehensive than the usual transcendental and empirical views. It is the '*vedic*' view and peculiar to the Vedas only. No other system of thought has even thought of it. The study of Vedanta is never complete without an understanding of this method and its application. It is not mysticism but the means by which clear reasoning leads to a direct perception of Truth. The importance of this method as the surest proof for establishing Reality was realised by Gaudapada and Sankara. Sankara's greatness lies in the fact that as a true metaphysician he bases his whole system of thought upon this important method. The Vedanta Sutras deal with this Method in Chapter III, pada 2, where Sankara describes it as the unique '*vedic*' method. Gaudapada, his predecessor, gives it the foremost place as is evident from his Karikas on the Mandukya Upanishad. Sankara's system will remain a sealed book if the method with all its implications is not properly understood. Vidyaranya in his *Panchadasi*, takes up *Avasthathrya* in the very first chapter in order to establish the Reality by an appeal to reason and facts of our experience. Even now in India there are several *Mutts* or religious organisations where this method is taught only to the most ardent students of philosophy. A metaphysical enquiry into the nature of Reality should be based upon reason and experience and therefore not even one aspect of our experience

can be left out. Hence in the Upanishads, whenever the final teaching is taken up, this method is taught first and then only others follow. Also this is the only Method which has a whole Upanishad entirely devoted to it. Mandukya Upanishad provides the clue to the whole 'vedic' position.

This 'vedic' Method resolves the totality of our experience in three states or 'Avasthas,' waking, dream and sleep. This whole universe presented to our view, is a phenomena of the enquirer's waking state only. A shadow of it is presented in the dream state in which also the reality of the world is not doubted at that time. In deep sleep this world is nowhere. The first seven verses in the Mandukya Upanishad deal with the four modes or 'padas' of the soul's experience. The four are explained in the light of 'upasana' under the sacred syllable, *AUM*, where *A* stands for the Waking, *U* for Dream and *M* for Deep Sleep and *AUM* for the whole of experience.

Mandukya Upanishad.

१. ओमित्येतदक्षरमिदं सर्वं तस्योपव्याख्यानं भूत भवन्नविष्यदिति
सर्वमोकार एव । यच्चान्यत्रिकालातीनं तदप्योकार एक ॥

Aum is the word. All this is an explanation of its past, present and future. All indeed is *Aum*, even all that is beyond the triple conception of time.

२. सोऽयमात्मा चतुर्ष्यात् ॥

This *Atman* has four quarters.

३. जागरितस्थानो बहिः प्रज्ञः...स्थूलभुगवैश्वानरः प्रथमः पादः ।

The first quarter is the *Vaisvanara* whose sphere is the state of waking, who is cognisant of the objective . . . whose fruition consists of the gross.

४. स्वप्नस्थानोऽन्तः प्रज्ञः...प्रविक्लिभुक् तैजसो द्वितीयः पादः ॥

The second quarter is the *Taijasa* whose region is the dream, whose is cognisant of the subjective only . . . whose fruition consists of the subtle.

५. यत्र सुप्तो न कंचन कामं कामयते न कंचन स्वप्नं पश्यति तत्सुषुप्तम् ।

सुषुप्तस्थान एकीभूतः प्रज्ञानघन एवानन्दमयो...चेतोमुखः प्राज्ञस्तृतीयः पादः॥

That is the state of deep sleep wherein the sleeper does not imagine anything and does not see any dream. The third quarter is therefore the *Prajna* whose sphere is the deep sleep, in whom all melt into one, who is a mass of sentiency, who is all bliss, and who is the way of sentiency.

६. एष सर्वेश्वर एष सर्वज्ञ एषोऽन्तर्याम्ये योनिः सर्वस्य प्रभवार्थो हि भूतानाम्॥

This is the Lord of all, all-knowing, the *Antaryamin*, the source of all, the origin and final resort of all beings.

७. नान्तः प्रज्ञं न बहिः प्रज्ञं नोभयतः प्रज्ञं न प्रज्ञानघनं न प्रज्ञं नाप्रज्ञम् ।

अदृष्टमव्यवहार्यमग्राह्यमलक्षणमचिन्त्यमव्यपदेश्यमेकत्मप्रत्ययसारं
प्रपञ्चोपशम शान्तं शिवमद्वैतं चतुर्थं मन्यते स आत्मा स विज्ञेयः ॥

The fourth is that which is not conscious of the subjective nor that of the objective nor that of both, nor that which is mere consciousness and sentiency, nor that which is all darkness. It is unseen, transcendent, uninferable, indescribable, the sole basis of consciousness, the negative of all illusions, the One and the non-dual. This indeed is *Atman*; it should be known.

Analysing these seven verses we get :

Deep Sleep	(<i>Prajna</i> , M.)	Causal	Self plus ignorance.
Dream	(<i>Taijasa</i> , U.)	Subtle	Self plus dream-world.
Waking	(<i>Visva</i> , A.)	Gross	Self plus waking-world.
Thuriya	(<i>Atman</i> , Aum.)	Truth	True self or Absolute.

Here the enquirer finds out that the waking-world does not accompany him in deep sleep, and the dream-world is found to be illusory. The waking-world is the sphere of plurality, action and morality. Dream is a subjective illusion, and in deep sleep the Self perceives nothing. The Self is the permanent factor while everything else is a percept of the waking state or an illusion of the dream. As the invariable substratum of the states, the Self is the Reality, because no state is possible without the Self. The ignorance of anything in sleep is only a waking idea. The ignorance that is assumed to persist in deep sleep is nothing but the indefinability of the true nature of the Self in terms of the waking intellect. As the unbroken thread and witness of the three states, the Self is the Real, while the world, mind, body and the states have only a contingent relation to the Self, being found in two of its particular modes viz., waking and dream. Sleep is the region

of bliss as the Self reaches there its true nature of undifferentiated unity. Every one of us feels it as soon as we wake up from sound sleep. Sleep is not unconsciousness as the modern psychologist supposes it to be. It is the region of pure consciousness according to the Upanishad, i.e., consciousness bereft of its subject-object relationship which is the characteristic feature of the Waking and Dream. If otherwise, the return to waking consciousness after sleep would be irrational and unnatural. This is the truth taught by Brihaspati to Indra in the form of a story in Chandogya. Deep sleep is not an annihilation of the Self as Indra wrongly held it to be, but is the fullness of Self's existence as Prajapati taught Indra. In deep sleep, space, time and substance, the limiting adjuncts of the waking and dream, have become dissolved into the true nature of Self. There being nothing else other than the Self, the Self alone is the Real. This is the truth taught by the Mandukya. Is this solipsism? No. The 'I' that is conscious of having slept and dreamt, is the transcendental 'I' which is itself the '*thuriya*' and which, therefore, is in reality free from sleep, dream and duality or plurality. Is the '*thuriya*' impersonal or abstract? The '*thuriya*' is the super-personal according to the Upanishad. It assumes the role of an ego in two of its states, waking and dream, where it has created a non-ego for its view. Personality is the highest in our experience, and therefore our Self cannot be impersonal as the impersonal is below the personal. It must be something more than what we mean by the term person, and never below that. The states dissolve in the Self but the Self is not lost in the states. The fact referred to as the person remains always as the 'I' in any experience, and never a 'he' or 'that'. It does not refer to any that we can discern as this or that in our experience. It refers to the whole of our person and thus transcends thought and speech, but is easily the only fact best known, as self-consciousness is always implied in experience. It is that which we feel but cannot express. Sankara describes the Self as Nitya, Buddha, Suddha, and Muktha—permanent, intelligent, pure and free. The person is That, "the highest and completest of all wholes, the most Real of reals."² "It exists; it is real; it has being, however it may be interpreted. . . . Personality not only proves to be the prime unit of reality and existence . . . but is the only solution of the sceptic's problem of the one and the many."³ This is the truth taught by the Māndukya Upanishad.

2. Holism and Evolution: By General Smuts.

3. The Problem of Personality: By E. N. Merrington, Part II, Chap. IV, page 192.

Vedanta as a science, goes so far and says that the Self alone is real and free from the temporary attachments made in each state. Going a step further, it examines the nature and meaning of the states themselves. What, then, are the three states and what do they signify? The Self's three states may not mean three for the Self. That we have a memory of the three states nobody can deny. But does 'three' mean the number? As numbers they must belong to the same time-space series. But each state has got its own time-space series. Dream has got its own series, while there is none in deep sleep. The three-ness of the Self's states is, therefore, an intellectual illusion of the waking intellect. And this question does not arise in dream or sleep. While the states are all fleeting, the Self alone remains as the one permanent Entity. "Dream becomes unreal in the waking, nor does the waking exist in the dream, both dream and waking are absent in deep sleep, and sleep too is absent in waking and dream. Their unreality is proved by their necessary intercancellations. But the Self is the Eternal Witness of the states and thus beyond them, the One which is of the nature of pure consciousness."⁴ Sankara's argument is a typical example of the '*vedic*' reasoning.

Even an illusion must have some meaning in the Real. What do the three states signify? According to the Mandukya, deep sleep signifies the purity of our Being, dream, freedom, and waking, all-knowingness. The Self exists as the Knower in the waking; its aspect as Absolute Freedom is testified by its dream-creations. If in deep sleep the Self does not know anything, it is not because of the absence of knowledge in the Self but because of the absence of objects of knowledge. There is then nothing else, no second thing to be known, not even the sense of I-ness since individuation presupposes differentiation. The Self attains its pure nature in deep sleep and therefore there is no knowing there. It is such a Reality that we have in waking and dream but not realised so by the then ego which is only a byproduct of the states themselves.

How is this '*vedic*' method superior to the scientific method? According to the state-view, the modern scientific methods deal only with one phase of experience, viz., the waking. Hence when applied to the study of dream and sleep, they interpret them wrongly, dream being treated as the subconscious and sleep as the unconscious state. Modern psychology commits this blunder in its study of dream and sleep. The questions of the subconscious and the unconscious are phenomena

4. Sankara: Aparokshanubhuti, Verses 57 and 58.

of the waking experience, and they do not arise in dream or sleep. What is true from the waking standpoint may not be true from dream or sleep standpoints. All casual explanations, to be true, must belong to the same time series. We have seen that the states are neither co-ordinate in space nor continuous in time. The conclusion according to the '*vedic*' method is that no state is the cause of another state but in their metaphysical value all states as states, are unreal being contingent. Proceeding a step further, the method offers us a definite criterion of Reality: empirically it is the unchanging Witness of the states and transcendently the Sole Entity. Thus we come to know conclusively what is the Real and what is unreal.

Is the world real? According to this '*vedic*' method, we have to answer thus: The Self being real, views what it sees as real also. Dream is absolutely real to the dreamer. The unreality of a state is seen only when the state is over, for, so long as a state lasts, it must be faithful to the character of its basis, the Self. It is the ever-present Self that accounts for the reality of a state. The order, correspondence, etc., adduced to prove the independence of the external world, is due to the presence of the Self whose nature is all-knowingness. The same accounts for the order and correspondence that we have in our dreams sometimes. Empirically this pure consciousness becomes an Act. Gentile, the Italian Realist, calls it an Act and makes it the Reality. Only he mistakes the empirical status for the transcendental, for act presupposes time. And Gentile's Mind is a creature of Time! Hegel's Absolute idea is merely a logical necessity. But the *Atman* is much more than that and therefore the Upanishad calls it '*Prajnanam*' or the Super-consciousness.

We have thus this distinct advantage in the method of *Avasthathrya*, that we are able to review the whole of our experience for observation and judgment. If we take waking alone, such a feat is impossible. Modern science errs in its conception that waking exhausts the whole of Reality, and thus in granting absolute reality to waking, subordinates the other two states to the waking as its adjuncts, without any warrant of reason or of justification. According to the '*vedic*' view each state is independent and all the three constitute the totality of experience. Thus by taking dream and sleep the '*vedic*' method leaves out nothing of the Self's experience. We come to know conclusively what is the Real and what is unreal. Recent American writers like Mary Whiton Calkins, Dr. Royce and others advocate a personalistic nature-philosophy "which makes it impossible to attribute sorrow or disappointment, yearning or doubt to the Absolute Self which is the all-knowing Person whose will is expressed in this existent uni-

verse of distinctively mental realities." Their Absolute Self is only assumed and not proven. And the '*vedic*' method gives us the only possible proof of the existence of the Absolute Self.

If the Self is the only Reality what about the appearance of 'other minds' and their common stage of free play known as the world? How does this '*vedic*' method answer the problem? We may say that the Self in its absolute freedom and by the very nature of that freedom, creates a whole world of illusory things and factors, all as mere ideas, and in its all-knowingness remains a Witness of them. Freedom seems to create free minds which in their enjoyment of their illusory freedom, forget their common basis, the really true and free Self. With the knowledge of the true Self, the false free minds or egos disappear and are merged beyond recognition in the Absolute Self just as the dream-figures get merged into the waking. The Real Self or Atman is neither benefitted nor emptied by the appearance and disappearance of worlds, minds or egos. This is described beautifully in Brihad-aranyaka thus: "Having gone to sleep, the Self creates for itself and out of itself a world of things and men. Having sported in those pleasure gardens and dallied with beautiful women, it withdraws the worlds again into itself." By calling the worlds, minds and egos as illusions, nothing is lost thereby. This is not a method of physical destruction of things and worlds, a consummation so devoutly wished for by Von Hartmann of Germany. The '*vedic*' method is a purely metaphysical method of valuation in terms of human experience and of reconstruction upon the results of valuation. We will still continue to live and do, to sleep and dream, but a knowledge of their unreality will remove their sting for us once for all. It will then be a 'knowing' existence, whose truth can be verified by each and every individual by his or her own ordinary experience. Herein lie the greatness and superiority of the '*vedic*' method over every other method.

Whatever the sceptics might say, a true Vedantin can assure the humanity that there is no cause for misery, that life is real and of the nature of bliss, that soul is free and all bondage is the result of one's free choice. What cannot be mended, should at least be clearly understood. This is what is done by the '*vedic*' method. Knowledge is only a thorough change in the angle of vision, and in the wider outlook on life, is seen as the result 'in life' and not after death. Knowledge is meant for the living only. Death is a precept of the waking state, and one's own death is a metaphysical impossibility. Immortality is seen and proved to be our very nature by the method of *Asvathathya*. There is no postponement of the day of release after death as all days and nights are only life's activities. Knowledge of the true

nature of our Self removes all fears, doubts and unnecessary hopes. Heaven and Hell are life's ideas, the one a mere solace and the other a threat—who knows anything of them? Here is bliss realisable in life itself, 'here and now' by every thinking creature. For the Self is immortal, all-knowing and absolutely free from any taint of sin or virtue. Vedanta alone can justify Wildon Carr's statement: "It is an illusion to imagine that we can pass out of Reality."

. . . Strangely graven

Is the orb of life . . .

And men in their millions float and flow

And seethe with a million hopes as leaven;

And they win their will or they miss their will,

And hopes are dead or are pined for still;

But whoe'er can know

As the long days go,

That to Live is Happy, hath found his Heaven!

The Chidambaram Temple

(Continued)

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IV

The Sabha Nayakar temple at Chidambaram is one of the famous shrines of South India and its history from epigraphical and literary references may be traced from the early centuries of the Christian era. Tradition takes its history still further back and according to traditional accounts, the pagoda arose when the Lord Nataraja together with 3,000 Dikshitaras appeared at this place to bless his great devotees, Vyaghrapada and Patanjali. The Dikshitaras claim themselves to be of divine origin and according to them, Brahma took them from Tillai to perform a 'Yagam' near Benares where they stayed till Hiranya Varman at the suggestion of the Chidambaram deity invited them back to Chidambaram. When they had arrived they found that there were only 2,999, and a voice from above announced that the God himself, Sabha Nayakar, was the missing one. These traditions seem to imply that from the inception of the temple the Dikshitaras have been regarded as a part and parcel of the institution. Tamil Literature tends to confirm the antiquity of the Dikshitaras. The earliest literary references to the Dikshitaras are to be found in *Dēvāram*. In *Dēvāram*, the sacred books of the Saivites, one of the poet-saints says, "I am the servant and devotee of 'Tillaimoovairavar'."¹ Sundaramurti, in his *Tiruthondathokai*, gives a list of the famous saints. Besides the names of the saints, the list gives the names of nine companies of saints called *Tolkai Adiyargal* to make room for all else who might have attained salvation. Of these, he mentions *Tillaivazh Andanar* (lit. the Brahmins living at Chidambaram, but really the 3,000 Brahmins) attached to the shrine as evident from the interpretation of *Sekkilar*.¹ Sambhandar, one of the *Dēvāram* hymnners, in one of his hymns, describes the *Tillaivazh Andanar* as he actually saw them.²

1. See தில்லைவாழ்ந்தணர் புராணம் in Periyapuranam.

2. "நீலத்தார் கரியமிடந்ருநல்ல

நெற்றிமேலுற்ற கண்ணினுர்பற்று

சூலத்தார் சுடலைப்பொடி நீரணிவரசுடையார்

சீலத்தார் தொழுதேத்து சிற்றம்பலஞ்"

(*Dēvāram*).

Nambi Andar Nambi refers to the *Tillaivazh Andanar* in his "Tirutondartiruvandhadi" in the following quotation :—

“செப்பத்தருப்புக் கழ் தில்லைப்பதியிற் செழுமறையோ
ரொப்பப்புவனங் கண்மூன்றினுமும்பரினூரெரித்த
வப்பர்க்கமுதத்திருநடர்க்கந் திப் பிறையணிந்த
துப்பர்குரிமைத் தொழில்புரிவோர் தமைச்சொல்லுதுமே”

Sekkilar's description of the *Tillaivazh Andanar* in *Periyapuranam* makes it appear that the Dikshitaras were well versed in the Sastras and were animated by no other purpose than that of devotion and service to Nataraja. These references in Tamil Literature show very clearly that the Dikshitaras have been intimately associated with the Temple even before the hymnal period.

At present the number of Dikshitaras have dwindled, and there are now about 250 married members. They are an endogamous clan. They never live outside Chidambaram and they are enjoined not to resort to any other occupation or means of livelihood than that of service and devotion to Nataraja. The Dikshitaras have been the hereditary trustees of the temple and the management of the temple and its affairs have been vested entirely in their hands. Every Dikshitar boy, as soon as he is married, becomes as of right a trustee and 'archaka' of the Temple, and his trusteeship is inalienable. The trusteeship does not descend from father to son, but it inheres in every member of the community of the Dikshitaras at Chidambaram from his birth so that in a particular family there may be at the same time both father and sons having an equal voice in the management of the institution. In no other temple does a whole community form the trustees and 'archakas' at one and the same time with every member of the community having rights of management from his birth. The Dikshitaras are a democratic joint family group for religious purposes, the Lord Nataraja being the family 'Deity' and 'Upasanamoorthi' of every Dikshitar. The worship in the temple is conducted in what is known as 'Vaidik pooja,' and this temple is the one solitary instance in which this 'Vaidik pooja,' which resembles in its ritual that of domestic worship, is followed, while the 'pooja' in other temples in South India is of the *Agama* form.

This temple has had, unlike all other South Indian temples, no landed property. The temple has not received at any time, and does not receive any 'Mohini' or 'Tasdik' allowance from Government. No accounts are kept. Though inscriptions afford instances of permanent

grants of property or other endowments in the name of the Deity by Hindu kings, there is at present no property in the name of the temple. It can only be explained by the fact that the temple has been allowed to be entirely dealt with and managed by the Dikshitar themselves, as if it were their own property. A Dikshitar is entitled to perform 'poojas' and 'archanas' only after he is initiated in the 'pooja'.

The temple worship has been conducted partly by contributions of the Dikshitar themselves from their own funds and by the collection of subscriptions from their constituents, and in the major part, by the periodical benefactions of the numerous devotees. There are six daily 'poojas' which are met out of 'kaṭṭalais' established by pious and charitable devotees. The help given by the people by means of money for conducting the necessary affairs of the temple is called 'kaṭṭalai'. That these 'kaṭṭalais' have been instituted from early times is borne out by some inscriptions. For instance, an inscription on the south Gōpura of the temple (right of entrance),³ and another inscription on the west Gōpura of the temple¹ (right of entrance), both dated Śaka 1510, record that provision made by Vaiyappa-Kṛishṇappa-Koṇḍama-Nāyaka for 20 offerings to be distributed among Saiva mendicants (*paradēsi*) in the temple was placed under the supervision of Namaśśivāya-Udaiyār, 'the superintendent of all services' (kaṭṭalai). The Dikshitar have nothing to do with these 'kaṭṭalais.' The agents of the 'kaṭṭalaidars' give the articles necessary for the daily 'pooja' in kind at the time of the 'poojas' and the accounts are kept by them. The Dikshitar are not entitled to ask for the accounts. For every 'kala pooja' there are on an average about six such 'kaṭṭalais,' and each of them contributes a small portion of the articles necessary for the 'pooja.' The value of such daily contributions may vary from half rupee to Rs. 3 at the highest.

The numerous festivals celebrated in the temple may be classified as follows:—(a) The monthly or 'Panchaparva' festivals; (b) Other festivals during the year; and (c) The two 'Brahmothsavams' in the months of December and June.⁵ These festivals are also celebrated from out of the contributions of various 'Ubayakars'. As regards the two 'Brahmothsavams' which last for 10 days, entire castes, such as

3. Inscription No. 349 of 1913.

4. Inscription No. 362 of 1913.

5. Pachaiyappa, the great educational benefactor, with the assistance of Manali Chinniah Mudaliar, inaugurated the June festival on June 28, 1791. He had the car of the God renovated at that time.

Kaikolars, Vellalars, Oil-mongers, etc., perform the festivals on particular days in the 10 days from out of the subscriptions which they levy from every one of the members of their own caste. The expenses for other annual festivals and the 'panchaparva' festivals are incurred by individual 'Ubayakars.' In many cases, the individual 'Ubayakars' change from year to year.

The only source of income is that derived from the general offerings in the temple and such offerings are, from immemorial usage, the property of all the trustees and constitute the recognised mode of livelihood of the Dikshitar. This immemorial usage has been recognised by Muthuswami Iyer and Shepperd, JJ., as follows :—"About 250 families of Dikshitar reside at Chidambaram and the net income of the temple which is derived from the general offerings is their recognised means of livelihood. According to usage, every Dikshitar is entitled on marriage to take part in the management, to do 'pooja', or perform service in the minor shrines, and to share in the emoluments of the institution."

These offerings are divided among the Dikshitar in the temple. The right of collecting these offerings is given to a batch of 20 Dikshitar who are on duty in the pagoda for 20 days at a time, and they have the charge of the keys of the respective shrines within the temple known as the Five Koyils and the custody of the jewels and other valuable articles in those shrines which are examined once in four days, and they guard the temple during nights. In this manner the right goes round to all the trustees during the year. The key to the common treasury room is with 20 persons who are the 'turn' men. The daily incomes of the temple go to the 'turn' people. If there is a lessee, they will go to him; if not, they will go to the 'turn' men.

The temple servants were originally paid in kind out of the offerings of the temple, but now they are supplemented by small cash payments from the common fund. The ancient and undisputed rule of the temple is that all the Dikshitar manage its affairs in common and that the 'veto' of any one of them is sufficient to prevent the execution of the business. The 'common man' goes to every house and gives verbal instructions that a meeting will take place. The meetings are conducted in a particular portion of the temple. The system of management of the temple is peculiar and unique. Every Dikshitar has a vote and voice in the management of the temple, and they form a truly democratic body. All personal relations and private differences are set aside when the Dikshitar meet in a body to discuss affairs relating to the temple. All questions affecting the management of

the temple are decided at the periodical meetings of the community by the vote of the majority, and the resolutions of the community are recorded in regular books maintained for the purpose. There are elaborate rules and improvised checks for preventing mismanagement and misappropriation, and these rules are strictly followed in the conduct and procedure of their meetings, and in the actual management of temple affairs; and the delinquents are fined or suspended by the resolutions passed by the Dikshitars in their meetings. Rules have been framed for the purpose of checking the various items of jewellery in the temple, and for the purpose of guarding the temple during nights by the Dikshitars themselves. Particular individuals are made responsible for the proper conduct of festivals and other services in the temple by the system of leasing out the right to collect the offerings on these occasions to a few individuals among them at the assembly of the Dikshitars, and making them accountable to the whole body of Dikshitars for the successful conduct of these festivals and services.

The jewels of the Temple contain some which are presents made by various Rajahs. There are lists in the respective temples giving particulars of the names of the Rajahs, the jewels they presented and the places they are kept in. Among them there is a jewel called 'Nalan Pathakkam'. The jewels are safely kept in a box in the respective temples and the keys of the boxes are in the hands of some Dikshitars deputed for the purpose. The person having the key must hand it over the next day to the person taking charge.

V

The Chidambaram temple exemplifies one of the important dancing postures of Śiva.⁶ There are many references in early Tamil literature to the dance of Śiva at Chidambaram. Such expressions as செம்பொன்னிலில் எழுதிமேய்ந்த சிற்றம்பல கூத்தனை. தில்லையம்பலக்கூத்தனை, தில்லையம்பலத்தாடுகின்ற அத்தாவுன்னாடல் of Appar and பொன்னம்பலகூத்தா of Manikkavasagar serve to indicate the sacredness of the temple as the place of Śiva's Dance, but the *Dēvāram* hymnners do not specify the name of the Deity.

There are many dances of Śiva. The fundamental idea underlying all these dances is more or less the same, viz., the outward expression of primal rhythmic energy. The origin of Śiva's dance is a

6. "The Lord of Tillai's Court, a mystic dance performs
What is that, my dear?" (Tiruvāṣaṁ—Pope's Edition.).

most interesting but baffling enquiry. Whatever the origins of Śiva's Dance, it became in time the clearest image of the *activity* of God. It is not possible to interpret here the various dances of Śiva. Some of the well-known dances are the Evening Dance, the Tāṇḍava and the Nadānta Dance of Nataraja.

The Evening Dance in the Himalayas is described in the *Śiva Pradosha Stotra*. In the Evening Dance, Śiva is only two-handed, and the co-operation of the gods is implied in their position of chorus. There is no prostrate Asura under Śiva's feet. One should like to know whether there is any special interpretation of this Dance in Saiva Literature.

Another well-known dance of Śiva is called the Tāṇḍava. It belongs to his *tāmasic* aspect as Bhairava and it is in the burning grounds that Śiva performs this dance with Devi. The Tāṇḍava Dance is in origin that of a pre-Aryan deity, afterwards merged in Śiva. An interpretation of this dance is given in Saiva and Sakta Literature.

The next and most important dance for us is the dance of bliss (Ananda-tāṇḍavam) of Nataraja in the golden hall of Tillai and this dance was performed by Śiva to the Gods and the Rishis, Vyaghrapada and Patanjali, who were performing penance in Tillai in order to enjoy the beatific sight of Śiva's Dance. Śiva is best known as the Dancer. His Dance is Evolution, Continuance and Involution. Nataraja is a form of Śiva and the word means 'Lord of the Dance.' Śiva as Nataraja has four arms; he has braided locks and these locks whirl in the dance. On the head are a cobra in a twisted form, a mermaid figure of the Ganges and the crescent moon. He has a man's ear-ring in the right ear, and a woman's in the left. One hand holds a drum sounding the call to all the people who are immersed in *samsara* to go to him for protection; another hand holds fire to give assurance of help to his devotees; of the other two hands, one is raised (*abhaya mudra*, 'do not fear') and the other points to the lifted foot (*kunjita pada*) which confers *moksha* or eternal bliss on all worshippers. Beneath the right leg, there lies the dwarf, Muyalakan. The concept of Nataraja is the synthesis of a long evolution. There are 108 postures of dancing according to the Bhāratiya Nāṭya-Śāstra. The postures recommended in dancing to please the *daityas* are numberless and a selected list of 108 of them called *Karanas* or single postures and 32 selected *Angahāras* (combinations of two or more of these *karanas*) are fully described. In the east and west Gōpuras of the Chidambaram temple, these *Karanas* are found cut on stones with appropriate

verses from the Nāṭya-Sāstra underneath each of the postures. Only 93 of these postures were recovered, the remaining 15 were either damaged or the compartments of the Gōpura altered during the repairs done to the temple. These postures are found in Bharata's order for about 60 numbers, and then owing to mason's or supervisor's ignorance or on account of some subsequent alteration in the construction, the remaining 48 are not in the order followed by Bharata. Kopperunjinga-deva, who set up an independent kingdom against the Cholas between 1243 and 1273 A.D., was the patron of these decorative sculptures in the Nataraja Temple. These sculptures are published in the report of the Archaeological Department—Epigraphy (1914).

The interpretation of the Dance of Nataraja is found in some of the well-known works in Tamil Literature, viz., Tirumular's *Tirumantram*, *Unmaivilakkam*, *Chidambara Mummanikovai*. Umapathi's *Koilpuranam* (Stanza 66) describes the Dance of Nataraja as representing the Panchakrityam (பஞ்ச கருத்தியம்.) What then is the significance of the Dance of Śiva at Tillai? The cosmic activity is the central motif of the Dance. The Dance represents his five activities (Panchakritya) viz., *Srishti* (creation), *Sthiti* (preservation), *Samhara* (destruction), *Tirobhava* (illusion, etc.), *Anugraha* (grace). Creation arises from the drum; protection proceeds from the hand of hope; from fire proceeds destruction; the raised foot implies salvation; and the fourth hand pointing to the lifted foot represents the refuge of the soul. All this symbolism is well explained in *Unmaivilakkam* (verse 36) and *Chidambara Mummanikovai*. Again, the symbolism of the Dance is explained in the *Tirukuttu Darshana* (Vision of the Sacred Dance) of Tirumular's *Tirumantram*. A true Bhakta is one who keeps in himself nothing but the thought of God so that He alone may abide and dance therein. A discerning and sympathetic critic of Indian art observes: "The essential significance of Śiva's Dance is three-fold: First it is the image of his Rhythmic Play as the source of all Movement within the cosmos which is represented by the Arch; secondly, the Purpose of his Dance is to Release the countless souls of men from the Snare of Illusion; thirdly, the Place of the Dance, Chidambaram, the centre of the Universe, is within the Heart."

The following extracts from the *Śtalapuranas* explain the symbolism of the temple:—

(Canto 15):—There is a Sabha called Ambara which is the abode of all good. In it I constantly dance in happiness. It is known as Chidambaram, and consequently it is revered by all.

(Canto 18):—As I who am pure occupy the soul which is in the body, even so in the world which is (like) the body, I sport in Chidambaram.

(Canto 85):—This called Chidambaram is (my) body, and I am the free soul.

(Pundarikapura Mahatmyam, Canto 59):—That Sabha (hall) is of the nature of Chit (Divine knowledge), and there is no doubt it is of the nature of Chit.

(Thillavana Mahatmyam, Canto 63):—The Chit Sabha which is in the middle of Virat Purusha.

Mahamaya is in the middle, facing the south. In the western wall, pure Shirodana is said to reside. But in the eastern part there is the independent Maya in the shape of a wall. It (the wall) is the cause of the creation and absorption of the nine Tattvas beginning with Brahma. The screen is said to be Thirodha Sakti having the shape of Prasada.

Of the length of 96 Angulas of the same breadth.

The Vedhi of Darsana shines on the southern part. The yantram of that name is small, invisible and imperceptible.

It is the mine of Kama Dhenu; and it is the abode of Sankha and other Nidhis. It is well worshipped by Swarna Karshana Bhairava and the eight Lakshmis.

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On its left side is placed the excellent Sparsana Chakra.

The Vedas, Rig, Yaju, Sama and Atharvana, the Puranas, Agamas, the Arts, the Mechanical Arts, sacred knowledge, etc., accordingly went soon to Pundarikapuram. The 64 Kalas and Vidyas (branches of knowledge) have on earth changed (their shape) as Vidyas.

They separately took their abode in the several places in the shape of pillars, mountains, beams, windows, wood, nails, gold plates, silver, copper, stone and earth.

In the south-east is Rig (Veda); the siras or head is in the middle. These two are said to be pillars. There are two (others) on the west.

These reside in Sadasiva Pita over it. But in Iswara Pita there are shastras numbering as many as there are karmas, i.e., (six). These with the Angas exist in the shape of pillars under Sada.

The pillars consisting of (representing) the five elements are in Rudra's Vedi.

In the middle of Vishnu's Vedi there are various kinds of Tattvas. The Tattvas are in the shape of windows according to different sorts.

The group of 96 Tattvas is clearly here in the shape of windows in five rows. In their midst the Agamas have come in the shape of pillars. The great Goddess of Divine Knowledge consisting of Chit has taken visible form and this incomparable salvation has taken its abode in the southern doorway.

On the upper part ceiling of the Sabha all the 64 Kalas (Arts) taking the shape of beams existing separately.

The various worlds numbering 224 are in the shape of planks. The inspirations and expirations numbering 21,600 are like gold leaf.

All the various kinds of nerves numbering 72,000 having taken the shape of nails.

The saktis, Vama, Gyestha, Rowdri, Kali, Kalivikarini, Bali, Balavikarini, Pramathani, Manonmani, these exist in the shape of stupis (domes).

In conclusion, I may add that the foregoing sketch of the temple is a tentative collection of materials rather than a finished work. It is hoped that students of South Indian history will work up these materials into a good monograph on the temple.

Industries in India.*

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India now ranks as one of the eight industrial countries of the world, yet agriculture is the principal industry and gives occupation to the vast majority of its population. The census returns of 1921 show that 73·9% of the population in British India are engaged in or dependent on agriculture and pastoral pursuits. The population of India living on agriculture has been steadily on the increase, for in the year 1891 it was about 61 per cent; it rose to 66 per cent in 1901, and to 73 per cent in 1921.

The Indian Famine commissions of 1880, 1898 and 1901, the Indian Irrigation Commission, 1903, the Taxation Enquiry Committee, 1925, the Economic Enquiry Committee, (Madras) 1931, the Royal Commission on Agriculture and other Commissions which have reported from time to time, have clearly pointed out that "the outstanding feature of Indian Rural Economy which is bound to arrest the attention of any one who enters on an investigation of the question is the appalling poverty of the rural population."

The cultivators in all parts of India are deeply involved in debt,¹ and speaking about the degree of poverty prevailing among them, Dr. G. Slater says: "Of the Pallans, Parayans, Cherians, etc., on whose toil the cultivation of the rice fields in South India mainly depends, it may be said generally that their earnings in grain and corn barely suffice for the subsistence of families large enough to maintain their numbers from one generation to another, the surplus offspring dying; they are habitually hungry and it is only because they make their own huts in their spare time, collect their own fuel, need scarcely any clothing, and enjoy abundant sunshine, that they can subsist at all."

Such then is the state of the agricultural population which forms the majority of the people of India. Owing to seasonal vicissitudes and the want of proper irrigation facilities there is often

* In a series of articles of which this forms a general introduction, I intend tracing the growth and development of industries such as Cotton, Iron, Steel, Jute, Coal, Sugar, Paper and Cement in India.

1. A very rough estimate of the total rural indebtedness of India is about Rs. 900 crores and the volume of agricultural indebtedness is increasing. (See The Indian Central Banking Enquiry Committee Report, 1931, Vol. I, page 55.)

a failure of crops, and the consequence is "that the average cultivator still continues to live on an insufficiency of food which reacts on his physical capacity for work and largely accounts for the high percentage of mortality in the country."²

In 1927-28 the total net area sown with crops was about 220 million acres which works out at one acre per head of the agricultural population, and if we take the total gross value of the agricultural produce on the basis of the 1928 price level it comes to about 1200 crores of rupees which means approximately Rs. 42 as the average annual income per agriculturist in British India. There can be no doubt whatsoever as to the reasons for the steady degeneration of the economic position of the cultivator in spite of his high inherited skill in husbandry. In 1880, the Indian Famine Commission pointed out that "a main cause of the disastrous consequences of Indian famines and one of the greatest difficulties in the way of providing relief in an effectual shape is to be found in the fact that the great mass of the population directly depends on agriculture and that there is no other industry from which any considerable part of the community derives its support. The failure of the usual rains thus deprives the labouring classes as a whole not only of the ordinary supplies of food obtainable at prices within their reach, but also of the sole employment by which they can earn the means for procuring them. The complete remedy for this condition of things will be found only in the development of industries other than agriculture, and independent of fluctuations of seasons. With a population as dense as that of India, these considerations are of the greatest weight, and they are rendered still more serious by the fact that the members who have no other employment than agriculture are, in large parts of the country, greatly in excess of what is really required for cultivation of the land. So far as this is the case, the result must be that the part of the population which is in excess of the requirements of agriculture eats up the profit that would otherwise spring from the industry of the community. It is not surprising in a country thus situated that material progress is slow."

It is clear from the above that in order to improve and accelerate the country's material progress, attempts should be made for the full utilisation of its natural resources. It is necessary that a thorough study of all possible ways and means should be made to give the people of the country diversified employment, to enable them to "participate to a much greater degree in the working of existing industries and to indicate the measures necessary to establish all those

industries for which there are natural facilities which at present cannot be utilized for varied reasons, most of which are well known. That India can become a great industrial country is not possible and it must look to the improvement of agriculture for any great amelioration of the condition of its many millions. It can, however, advance far beyond its present status and it is urgent that progress in that direction should be accelerated."³

So it has been argued that in the interest of the agricultural population of India as well as from the purely economic point of view, the need for the industrialisation of India is great. To solve the question how we could best increase the agricultural holdings⁴ and income, it is essential that pressure on land should be relieved to a certain extent; other possible methods to improve the position of the masses in India are by emigration, extensive and intensive cultivation and industrial development.

Emigration from India to other parts of the British Empire exceeds two millions. The emigrants are distributed as follows.⁵

Ceylon	..	..	..	..	820,000
British Malaya	..	..	..	..	660,000
Mauritius	..	..	..	..	274,000
Union of South Africa	..	..	..	..	161,000
Trinidad	..	..	..	..	126,000
British Guiana	..	..	..	..	125,000
Fiji Islands	..	..	..	..	61,000
East Africa	..	..	..	..	55,000

This opening however has practically been closed, and the Indian people are opposed to sending Indian workers to other countries. The indentured system was first started in 1834; by this, simple and illiterate workers of India were recruited and sent to strange lands where they were bound to estates and could not move without a permit. In these conditions they had to stay for 5 years, and often they had no other recourse than to re-indenture themselves. The life of the average indentured labourer was extremely miserable. Indians who had developed land by their labour in such places as Kenya and Africa,

3. "Modern Economic Trend," by Sir A. Chatterton, C.I.E., Capital, February 27, 1930. page 465.

4. In extreme cases, the condition is ludicrous: in Ratnagiri, for instance, the size of individual plots is sometimes as small as 1/160th of an acre, or 30¼ square yards. (C.M.D. 3132, page 1341.)

5. Cmd. 3132, page 583.

on its being found that their labour was no longer required, had to submit to a policy of Asiatic exclusion by which every attempt was made to render the life of indentured labourers worse. It is not necessary here to recount the various hardships and difficulties that arose out of the indentured system, or the economic and political justification for such action. But in India a strong agitation against the indentured system was started and the Government of India was requested to stop recruitment of labour to Trinidad, British Guiana and Fiji. Nor is it possible here to enter in detail upon the various measures that were taken, but it is sufficient to say that in the end Lord Harding gave an assurance that this system would be abandoned, and by the passing of a law in 1922 the indentured system was completely abolished.

Owing to the low standard of Indian labour and the fear of severe competition, Indian labourers are not wanted in other countries and hence this medium of improvement too is completely closed. In present conditions emigration to improve the standard and relieve the overcrowded population is impossible and therefore only two other possible courses are left for bettering the conditions of the masses of India. These are extensive and intensive cultivation and industrial development.

It has been pointed out that in India agriculture is the basic industry, and in a country where large numbers of the population directly or indirectly live on agriculture, it is essential that this basic industry should be improved in order that the standard of life may be raised. But unfortunately, at present there is little intensive production, for, with the use of primitive implements, inferior seed and material, and without proper manure or sufficient capital, everything conduces to a very low yield. Hence the production of material commodities in India should be intensified and methods of production modernised.

According to the recent agricultural Commission's report, the areas under various crops are 80 million acres under rice, some 24 million acres under wheat, 33 million under great millets, 18 million under cotton, 14 million under the principal oil seeds and 14 million under grain.

According to agricultural statistics (1923-'24) the total area of British India is 667,468,000 acres, classified as follows:—

	Acres.	Per cent.
Forests	.. 85,976,000	13
Not available for cultivation	.. 151,841,000	23
Culturable waste other than fallow	.. 154,602,000	23.5
Current fallow	.. 49,600,000	7.5
Net area sown	.. 222,490,000	33

Deducting the area covered by forests, barren and unculturable land, buildings and roads, there is a balance of 426,092,000 acres of which nearly 223,000,000 acres are cultivated, leaving approximately 203,699,000 not cultivated. Thus a large area available for cultivation is allowed to lie fallow or unused, and so even from the extensive point of view the maximum return is not obtained.

India is able to produce almost all she needs in the shape of food stuffs and raw materials. Taking the average of the five pre-war years, India exported 9% of her output of rice, 15% of her wheat, 36% of the production of oil seeds, 51% of jute and 56% of cotton. In spite of all this, cultivation covers only 59% of the total cultivable area and the method of production is inefficient. Low production in India is, as indicated earlier, due to various causes such as the use of bad implements, want of capital, want of scientific knowledge, want of manure, and the subdivision and fragmentation of the lands.

To be brief, India has a wealth of natural resources in the shape of fertile soil and plenty of water if properly tapped, and yet the backwardness of agriculture strikes even the casual observer. It is essential to awaken the agriculturalist to the adoption of scientific methods and to the efficient management of farms. There should be some scheme to bring under cultivation good land which at present lies fallow or uncultivated. The lands which belong to the Government should be distributed at cheap prices so that they may be cultivated. There is a tendency to increase the area under cultivation of such crops as jute and cotton, so that they may be exported and a return in money be obtained. This would not be possible if such crops as rice or wheat were cultivated instead. In order that the teeming millions of Indians should have food, Indian agriculture must be organised and intensified primarily to meet the requirements of the country itself. We cannot dwell upon the various ways of improving agriculture in India and raising the standard of the cultivators who form the larger proportion of the population. One can only refer to the Lord Linlithgow Commission which states: "The demand for a better life can, in our opinion, be stimulated only by a deliberate and concerted effort to improve the general conditions of the countryside, and we have no hesitation in affirming that the responsibility for initiating the steps required to effect this improvement rests with the Government." It goes on to say that in spite of the increased expenditure in recent years it is felt "that these forces are inadequately appreciated by the Government of India and by local Governments, and that the necessity that the rural problem should be attacked as a whole, and all points simultaneously, is still insufficiently

present in their minds. If the inertia of centuries is to be overcome, it is essential that all the resources at the disposal of the State should be brought to bear on the problem of rural uplift. What is required is an organised and sustained effort by all those departments whose activities touch the lives and the surroundings of the rural population."⁶

It is therefore essential, for raising the standard of life of the population of India, to promote the prosperity of the whole population and to enhance the national income at the source. To achieve this a comprehensive policy must be followed, and, as the commission says. "it must be undertaken immediately, and the responsibility to give effect to such a policy must remain that of Government and Government alone."

Apart from the improvement of agriculture, there is a dominant opinion in India, that a further solution might be found in rapid industrialisation. Mr. Moreland in 1917 observed: "It is matter of common knowledge that the present income of the country, even if it were equitably distributed, would not suffice to provide the population with even the indispensable elements of a reasonable life. This fundamental factor of poverty is unquestionably co-related with the undue preponderance of Agriculture as a means of livelihood."⁷ The Famine Commission of 1880 also pointed out "that the only remedy for the recurring disasters of famine is the rapid industrialisation of the country, providing diversified employments for the people."

It has been repeatedly said that India will primarily remain an agricultural country, but this does not mean that there should not be any industrial development. No doubt agriculture will continue to be the occupation of the great mass of the people, but at the same time India contains extensive deposits of coal, iron ore, lead, zinc, copper, as well as other valuable products out of which important industries can be built. In this connection, it is clear that India's industrial development can be continued without hindrance, if she takes lessons from other countries and tries to avoid those mistakes that have brought bitterness between capital and labour elsewhere. By this and this alone can her industrial development be accelerated.

The government of the country must also play its part. "India is exactly like America in regard to all the natural advantages for a successful organization of industry; why is the U. S. A. to-day in the forefront

6. Cmd. 3132, 1928, page 672.

7. Quarterly Review. 1917.

of industrial nations and India amongst the backward members? The answer to the query is to be found in the absence of a national economic policy on the part of the state. The American Government was determined to make the most of what nature has, in her abundance, given her; the Indian Government has been either ignorant of, or indifferent to, the great blessings which Nature has endowed this country with. We are firmly persuaded that if the Indian Government, like the American Government, makes up its mind now, measures could be taken for converting the potential wealth of the country into kinetic wealth, and India could occupy a proud place amongst the industrial nations of the world within a decade or two.”⁸

The perquisites of Industrialisation viz., men, money, materials and motive power are available in plenty if only proper organizations can be established to tap them. Labour to work the factories can be found in any quantity, and there is abundance of raw material and primary agricultural products. The market is unlimited, for India, with one-fifth of the population of the world, affords one of the largest markets at the very door of the indigenous industries. Coal in certain provinces is obtainable for providing power for the factories at an economic price: hydro-electric sources could be developed for the purpose in certain other provinces. Already hydro-electric schemes are found in different places in India. The Cauveri falls have been harnessed in Mysore and the average power generated is 14,310,000 B.T. units per month. Then there is the enterprise of the Tata Hydro-Electric Scheme which embraces three companies, namely, Tata Hydro-Electric Power Company, Andhra Valley Power Company and Tata Power Company. The full investigation of the Pykara Hydro power scheme in Madras shows that it is capable of producing 100,000 horse power and thus could supply cheap power for many districts in the Madras Presidency. The hydro-electric scheme of the United Provinces and the Uhl project of the Punjab are of great potential promise. Hence all the necessities for the building up of industries in India are available and nothing further is required beyond a national economic policy on the part of the state for the achievement of the economic regeneration of the country which would make “India great and glorious alike for her own good and for the good of the world.”

We need not dwell in detail upon the importance of such an industrial development but it may be summarised in a few words. Industrial development in India will achieve a general rise in level of

the wealth and welfare of the population, will tap the capital resources at present lying unused, will relieve the country from the danger of being too greatly dependent upon agricultural pursuits which are subject to seasonal fluctuations, will absorb much of the unemployed labour of the country, and, by raising the average condition of the individual, will enable the state to increase its revenue by further taxation. Lastly, opportunity will be afforded for the beneficial development of national character; the spirit of enterprise and commercial adventure will be stimulated; and ample scope for scientific work and inventions will be provided by commercial and industrial necessity.⁹ This would redound to the credit of the nation as a whole and enable her to take a higher place in the world of science and thought and education.

It has been maintained that India is destined by nature to be an agricultural country and that the idea of industrial organisation has never played a prominent part throughout her past. It cannot be disputed that the country has always been largely agricultural and has never been an industrial country in the modern sense of the term. The statement however that there have never been important industries in India can be disproved by an appeal to her past history.

The report of the Indian Industrial Commission begins with the following observation. "At a time when the West of Europe, the birth-place of the modern industrial system, was inhabited by uncivilized tribes, India was famous for the wealth of her rulers, and for the high artistic skill of her craftsman. And even at a much later period, when the merchant adventurers from the West made their first appearance in India, the industrial development of this country was at any rate not inferior to that of more advanced European nations." We are told in the same report that "the iron industry not only supplied all local wants, but it also enabled India to export its finished products to foreign countries. The quality of the material turned out had also a world-wide fame. The Indian steel was once in considerable demand even in England for making cutlery."

As regards iron manufactures, Professor Wilson says: "Casting iron is an art that has been practised in this manufacturing country (England) only recently. The Hindus have the art of smelting iron, of welding it, and of making steel, and have had these arts from time immemorial."

9. See Report of the Indian Fiscal Commission 1921-22, page 23.

10. Report of the Indian Industrial Commission, 1916-1919. Chairman Sir T. H. Holland, D.Sc., F.R.S. (Cmd. 51).

It is well known to all students of Indian history that the skill of Indians in producing fine muslins, and the arts of cotton spinning and cotton weaving reached a very high state of proficiency, and the products were in great demand in Western countries. "The skill of the Indians" says Professor Weber, "in the production of delicate woven fabrics, in the mixing of colours, the working of metals and precious stones, the preparation of essences and in all manner of technical arts, has from early times enjoyed a world wide celebrity."

"Less than a hundred years ago," wrote Sir Henry Cotton in 1890, "the whole commerce of Decca was estimated at one crore of rupees, and its population at 200,000 souls. In 1787 the exports of Decca muslin to England amounted to 30 lakhs of rupees; in 1817 they had ceased altogether. The arts of spinning and weaving, which for ages afforded employment to a numerous and industrial population, have now become extinct." Attempts were made to keep the industries from dying and according to Mr. Romesh Chandra Dutt, "In the first four years of the nineteenth century, in spite of all prohibitions and restrictive duties, six to fifteen thousand bales of cotton piece-goods were annually shipped from Calcutta to the United Kingdom. The figure rapidly fell until 1813. The opening of trade to private merchants in that year caused a sudden rise in 1815; but the increase was temporary. After 1820 the manufacture and export of cotton piece-goods declined steadily, never to rise again".¹¹

These goods were produced cheaply and India was thus able to compete with other countries. Commenting on the prosperity of the silk and cotton goods trade of India, Prof. Wilson, the historian of India, wrote¹² "that the cotton and silk goods of India up to the period (1813) could be sold for a profit in the British market, at a price from 50-60 per cent lower than those fabricated in England. It consequently became necessary to protect the latter by duties of 70-80% on their value, or by positive prohibition."

Another important industry was shipbuilding. This industry also gradually succumbed and never revived again. Lord Wellesly, reporting about the prosperity of the shipping industry in India, said: "The port of Calcutta contains about 10,000 tons of shipping, built in India, of a description calculated for the conveyance of cargoes to England. From the quantity of private tonnage now at command in the port of Calcutta, from the state of perfection which the art of shipbuilding has

11. *Economic History of British India*, by Mr. Romesh Chandra Dutt, page 296.

12. See *The History of British India* by James Mill, Vol. II, pages 14 and 15.

already attained in Bengal (promising a still more rapid progress and supported by abundant and increasing supplies of timber), it is certain that this port will always be able to furnish tonnage to whatever extent may be required for conveying to the port of London the trade of the private British Merchants of Bengal."¹³

Thus we see India had prosperous industries in the past, and her products especially her silk and cotton goods and the muslins of Decca were known all over the world, and therefore India according to the Sir Balfour Commission Report ranks as "one of the oldest seats of the cotton industry, and in the early days of the East India Company, her muslins and other fine products were unrivalled in quality."¹⁴

The East India Company and the European traders came, therefore, to India not to secure the raw produce of the country but to get the great variety of valuable manufactured goods available there. Mr. Moreland estimates that the annual demand of the English merchants alone was something over 100,000 pieces, and to this must be added Dutch exports. Indian weavers profited substantially by this new export trade, and the gain derived from it must have been considerable. In spite of all this it should be understood that there were no factories in the modern sense existing at that time in India. Nor were the goods made to suit the taste of the customers. Generally, weaving was done within reach of the seaboard, "to serve the specific purpose of providing cloth for particular Asiatic markets, and European merchants had to adapt themselves to the arrangements which they found at work."¹⁵ The weavers had little capital and therefore advances were taken against future delivery. The production was organized in numerous small units which were hindered to a large extent by a scarcity of capital, and the essence of the business was to adjust and to follow the market. As Mr. Moreland writes: "The position occupied by the weavers stands out clearly in the mercantile correspondence of the period; in one sense each man worked for himself, in another he was in the power of the capitalist who advanced the funds required to buy materials and support him while at work."

During the Sikh period (1819-46) thousands of men, women and children were employed in the woollen industry, and Kashmir shawls were exported to Europe. Moorcraft, an English traveller, visited

13. Quoted from Mr. Digby—Prosperous British India—page 86.

14. Committee on Industry and Trade. Survey of Textile Industries (Cotton, Wool and Artificial Silk), 1928, pages 99, 51, 148.

15. From Akbar to Aurangzeb. A Study in Indian Economic History, by W. H. Moreland, C.S.I., C.I.E., pages 135 and 136.

Kashmir in order to find out the methods of manufacture of shawls, and after learning the same sent full information which resulted in the manufacture of shawls in Paisley and the complete destruction of this industry in Kashmir. There were other industries flourishing in Kashmir during this period such as paper-making and carpet weaving, but the most flourishing industry was shawl-making and the prices of these shawls varied from Rs. 60 to Rs. 2,200 or from Rs. 180 to Rs. 6,600 in terms of the present currency. Next to land revenue, the duty on shawls formed the most important source of revenue, and out of the total production of 105 lakhs (of the present day British rupee), the government got 12 lakhs in the way of *ad valorem* duty.¹⁶

Such then were Indian conditions in the later half of the 18th century, but after 1817 the economic life of India began to change rapidly for the worse and India became a predominantly agricultural country. To make matters completely clear it would be essential here to discuss the whole economic history of India of this period, the political situation and the policy followed by the East India Company before we could point out all the causes that led to India's decline from the industrial point of view. Space, however, does not permit us to go into detail and describe and argue on those points, and hence we shall be content to limit ourselves to the discussion of only two or three important causes.

At the end of the eighteenth and the beginning of the nineteenth century, there were vast, revolutionary changes in the methods of production in Great Britain, and the domestic system was replaced by the factory system which, with the new inventions accompanying it, made possible production on a large scale. In order to push the export trade of cheap goods thus produced various methods of encouragement were given. The period which saw the rapid growth of English industries coincided with the growth of her control over her Indian possessions.

The capitalists who financed the building of the factories were out to accumulate wealth, no matter what this might involve to those who laboured for them. The prevalent theory of 'laissez faire', the absence of factory legislation and humanitarian ideals conduced to the extreme exploitation of the workers. Such capitalists did their best "to dis-

16. Kashmir under the Sikhs, by P. N. K. Banerji, B.A., I. J. of E., Vol. XIII, S. No. 48.

courage the manufactures of India and colonies." Indian cotton manufactures were liable to the following charges in England.¹⁷

			£	s.	d.
Calicoes for every £100 value	..	..	81	2	11
Cotton raw (per 100 lbs.)	..	..	6	16	11
Cotton manufactured	..	..	81	2	11
Hair or Goats' wool manufactured	..	..	84	6	3
Flowered and stitched muslins of white Calicoes (for every £100 in value)	..	..	32	9	2
Other manufactures of cotton not otherwise charged	..	..	32	8	2

Apart from the shutting out of Indian manufactures in this way, the superiority of British machinery enabled English merchants to sell their goods in Indian Markets. In this way British manufactures gained ground in Indian markets, and Indian manufactures lost grounds proportionately. Sir George Tucker observes that at this period (1823) "the silk manufactures of India and its piece goods of silk and cotton intermixed have long since been excluded altogether from our market; and of late, partly in consequence of the operation of a duty of 67%, but chiefly from the effect of superior machinery, the cotton fabrics which heretofore constituted the staple industry of India have not only been displaced in this country, but we actually export our cotton manufactures¹⁸ to supply part of the consumption of our Asiatic possessions. India is thus reduced from the state of a manufacturing to that of an agricultural country."¹⁹

Moreover at this time it was still held that the colonies were merely plantations, useful in supplying Britain with raw materials in order that she might manufacture goods and return them to the Colonies. This policy of discouraging the manufacture of goods in British possessions was vigorously followed till the American War of Independence. Thus India in the early part of the 19th century also began to supply raw materials and gradually became a plantation "growing raw produce to be shipped by British agents in British ships, to be worked into fabrics by British skill and capital, and to be re-exported to India by

17. Quoted from Cmd. 51, page 250.

18. Up to 1801, the cotton goods sent out from England to India amounted in value to £21,000; by 1813 they had risen to £108,824. At the end of the century it was just under £20,000,000. In the year before the war it had risen to £44,581,000. (Cmd. 51).

19. Taken from R. C. Dutt's *Economic History of British India*, page 262.

British merchants to their corresponding British firms in India and elsewhere".²⁰

It was in this way that India became mainly dependent "on the single and somewhat precarious resources of agriculture." This process of ruralization went on for a century and brought with it many miseries, especially during the series of famines that followed. At last the people of India have come to realize the importance of adopting modern methods of manufacture and the necessity of seriously applying themselves to the revival and encouragement of indigenous industries which have already died out or are on the way to extinction. During the opening years of this century a cry for industrialization began with the rise of a national feeling in India; this cry for industrialization increased, and the victory of Japan over Russia gave encouragement and "left an abiding impression on India's imagination." It was argued that wealth and production all round were low and that "the enormous population has little to spare for more than necessities of life." So in order that satisfactory conditions for the people as a whole might be secured, the national income must show a speedy rise which can be secured largely by industrialisation.

A country cannot depend entirely on agriculture alone for her prosperity and as a famine commission rightly says: "Much of the poverty of the people of India and of the risks they are exposed to in seasons of scarcity lies in the unfortunate circumstance that agriculture forms almost the sole occupation of the mass of population, and that no remedy for present evils can be complete which does not include a diversity of occupations through which the surplus population may be drawn from agricultural pursuits, and led to find the means of subsistence in manufactures or some such employments".²¹

Agricultural wealth can be developed only when industries and commerce flourish. The War gave a special emphasis to an active policy of stimulating industries, and the urgent necessity of such development is advocated by the authors of the Montague-Chelmsford report when they say that "on all grounds, a forward policy in industrial development is urgently called for, not merely to give India economic stability, but in order to satisfy the aspirations of her people who desire to see her stand before the world as a well poised, up-to-date country, in order to provide an outlet for the energies of her young men who are otherwise drawn exclusively to Govern-

20. Ranade: *Essays on Indian Economics* (1898), page 99.

21. Report of the Indian Famine Commission, 1880: Part II, page 175. C—2735.

ment service or to a few overstocked professions, and in order that the too speculative and literary tendencies of Indian thought may be bent to more practical ends, and the people may be better qualified to shoulder the new responsibilities which the new constitution will lay upon them".²²

We see therefore that both the people of India and the Government are trying to encourage the Indian Industrial movement and to develop indigenous industries. It can be safely said that the Government of India was unwilling to do anything in support of this policy up to 1916 and gave their support reluctantly even after that. The war and the Montague reforms however, made the Government of India abandon a 'laissez faire' policy towards Indian industries and take a somewhat active interest in them.

It should be noted however that the progress towards the industrialization of India will not be rapid but only gradual. England and other countries had and have facilities which India does not possess. India is not politically free and the geographical conditions and the mentality of her people make it impossible for the country to adapt herself quickly to new conditions that are required for the rapid development of industry. Apart from this, the immense size of the country and the lack of means of communication and various other difficulties make speedy progress impossible. The Government has now undertaken railway construction on a large scale and efforts are at last being made to exploit the mineral resources of the country, "but a more powerful and better directed stimulus is needed to start the economic development of India along the path of progress. Such a stimulus can only be supplied by an organised system of technical, financial, and administrative assistance."

(To be continued.)

On an Arithmetic Function concerning Primes¹

By

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1. Let $p(n)$ be the greatest prime not exceeding n
and
$$n_{r+1} = n_r - p(n_r).$$

Then $n = n_1 = n_2 + p(n_1)$

$$n_2 = n_3 + p(n_2)$$

$$n_r = n_{r+1} + p(n_r)$$

Adding, $n = p(n_1) + p(n_2) + \dots + p(n_r) + n_{r+1}$

Though 1 is not usually regarded as a prime, for convenience let us call 1 also a prime. So, in this paper, 'a prime' means either a prime in the ordinary sense or 1. When n_r is a prime, $p(n_r) = n_r$; and $n_{r+1} = 0$. Let us stop at that stage. Then

$$n = p(n_1) + p(n_2) + \dots + p(n_r). \quad (1)$$

It is clear that every positive integer can be represented in the above form. These primes are all different and are in decreasing order. This easily follows from Bertrand's postulate. Obviously the representation is unique. When n is a prime $r = 1$; when n_2 is a prime $r = 2$; and so on. This r is certainly a function of n and so let us represent it by $R(n)$. That is, $R(n)$ is the number of primes required

* This problem was suggested to me by Prof. K. Ananda Rao. I merely mentioned the main results in my paper "On some empirical theorems of Scherk" in the *Journal of the Indian Mathematical Society*, Vol. XVII (1928). The proofs are given here.

to represent n in the form (1). What can we say about $R(n)$ in the general case? The problem raises the following interesting questions:—

- (1) Is $R(n)$ bounded or not in the general case?
- (2) What is its maximum order?
- (3) For what classes of numbers is $R(n)$ maximum?

Except the first one, the others seem to be extremely difficult. The main results proved in this paper are

$$(1) \quad \lim_{n \rightarrow \infty} R(n) = \infty$$

$$(2) \quad R(n) = o(\log n)$$

$$(3) \quad R(n) < 2 \log \log n \quad \text{on the Riemann hypothesis.}$$

2. To answer question (1), we want the help of the following

Lemma:—If n be any positive integer, then we can find two consecutive primes p_1 and p_2 whose difference is greater than $n + 1$.

Let p be the prime immediately succeeding n , and P be the product of all the primes not exceeding p . Then, when t is a positive integer satisfying the condition

$$p + 1 \leq t \leq 2$$

$P + t$ is composite; for, any prime factor of t is also a factor of P . Hence, between $P + 2$ and $P + p + 1$ (both inclusive), there is no prime. So, if p_1 be the greatest prime not exceeding $P + 1$, and p_2 the prime immediately succeeding p_1 , then

$$p_2 \geq P + p + 2$$

$$\therefore p_2 - p_1 \geq P + p + 2 - (P + 1) = p + 1 \geq n + 2.$$

Hence the lemma.

Now we are in a position to answer question number (1). Taking the notation of the lemma, let $N = n + p_1$. Then, by the lemma, there is no prime between p_1 and N . Therefore, $p(N) = p_1$ and $p_1 > n$.

So, N requires one more prime than n . Consequently,

$$R(N) = R(n) + 1. \quad (2)$$

Thus, given any positive integer, we can find another which requires one more prime. So, given any positive integer r , we can find an integer n such that $R(n) \geq r$. Hence,

$$\lim_{n \rightarrow \infty} R(n) = \infty$$

3. A. If $\pi(x)$ denote the number of primes less than x , then it is known that

$$\pi(x) = \int_2^x \frac{du}{\log u} + O\left(x e^{-\lambda \sqrt{\log x}}\right), \quad \lambda > 9.$$

So, given t a positive integer, we can find x_0 such that for all $x \geq x_0$

$$\text{there is at least one prime between } x \text{ and } x \left\{ 1 - \frac{1}{(\log x)^t} \right\} \quad (4)$$

Let n be very great compared to x_0 . Then with the notation in § 1, we get

$$n = n_1 = n_2 + p(n_1)$$

$$\text{From (4), it follows that } p(n_1) > n \left\{ 1 - \frac{1}{(\log n)^t} \right\}$$

$$\text{So, } n_2 < n (\log n)^{-t}$$

$$n_3 < n_2 (\log n_2)^{-t}$$

$$\dots \dots \dots$$

$$\dagger n_{r+1} < n_r (\log n_r)^{-t}, \quad \text{provided } n_r > x_0$$

Therefore,

$$n_{r+1} < n \left\{ \log n \log n_2 \dots \log n_r \right\}^{-t} < n (\log n_r)^{-rt} \quad (5)$$

† Here r has not the particular significance assigned in I.

Let $1 \leq n_{r+1} < \sqrt[n]{n} \leq n_r$ and $n_r > x_0$ (6)

Then, from (5) and (6)

$$1 \leq n_{r+1} < n (\log \sqrt[n]{n})^{-tr}$$

Therefore,

$$r < \frac{\log n}{(\log \log n - \log 2) t} \quad (7)$$

Let r_s be the number of primes required to reduce the remainder

from $x^{(\frac{1}{2})^{s-1}}$ to $x^{(\frac{1}{2})^s}$ where $x^{(\frac{1}{2})^s} \geq x_0$

Then, from (7)

$$r_s < \frac{\log x}{2^{s-1}t (\log \log x - s \log 2)} = T_s \quad (\text{say}). \quad (8)$$

Now,

$$T_{s+1} = 2 \left\{ 1 - \frac{\log 2}{\log \log x - s \log 2} \right\}$$

$$\text{So, if } s < \frac{\log \log x}{\log 2} - 2, \text{ then } T_{s+1} < T_s \quad (9)$$

$$\text{Let } x^{(\frac{1}{2})^s} \geq x_0 > x^{(\frac{1}{2})^{s+1}} \text{ and } \frac{\log \log x}{\log 2} - 2 > 2 \quad (10)$$

Then, from (8) and (9),

$$r_k < T_1 \quad (k=1, 2, \dots, s).$$

Therefore,

$$\begin{aligned} r_1 + \dots + r_s &< T_1 \times s = \frac{\log x}{t (\log \log x - \log 2)} \times \frac{\log \log x - \log \log x_0}{\log 2} \\ &< \frac{\log x}{t \log 2}; \end{aligned}$$

$$\text{for, from (10), } s \leq \frac{\log \log x - \log \log x_0}{\log 2}$$

$$\text{Now, } x^{(\frac{1}{2})} < x_0^2$$

$$\text{Let Maximum } R(m) = b, \quad (m = 1, 2, \dots, x_0^2).$$

Then

$$\begin{aligned} R(x) &\leq r_1 + r_2 + \dots + r_s + b \leq \frac{\log x}{t \log 2} + b \\ &< \frac{2 \log x}{t \log 2} \quad \text{when } x > a(x_0)^* \end{aligned}$$

Now t can be taken as large as we please.

So

$$R(x) = o(\log x).$$

By assuming the Riemann hypothesis, the upper limit for $R(x)$ can be reduced further. On that hypothesis,

$$\pi(x) = \int_2^x \frac{du}{\log u} + O(\sqrt{x} \log x).$$

So, given δ , an arbitrarily small positive number, we can find x_0 such that for all $x \geq x_0$, there is at least one prime between x and $x^{1/2} + \delta$.

Let $x = n_1$. Then

$$p(n_1) > n_1 - n_1^{1/2} + \delta = x - x^{1/2} + \delta$$

$$\therefore n_2 = n_1 - p(n_1) < x^{1/2} + \delta$$

$$n_3 < n_2^{1/2} + \delta < x^{(1/2 + \delta)^2}$$

$$\dots\dots\dots$$

$$\dots\dots\dots$$

$$n_{r+2} < x^{(1/2 + \delta)^r} \text{ provided } n_r \geq x_0$$

Let $n_{r+2} < x_0 \leq n_{r+1}$. Then,

$$x^{(1/2 + \delta)r} \geq x_0$$

$$\therefore (1/2 + \delta)^r \log x \geq \log x_0$$

$$\therefore r \log (1/2 + \delta) + \log \log x \geq \log \log x_0 > 0$$

* $a(x_0)$ is a function of x_0

$$r < -\frac{\log \log x}{\log \frac{2}{1+2\delta}}$$

Let $b = \max. R(m), \quad (m = 1, \dots, x_0)$

Then

$$R(x) \leq r + 1 + b < \frac{\log \log x}{\log \frac{2}{1+2\delta}} + 1 + b$$

$$< 2 \log \log x, \text{ when } x > a(x_0)$$

4. Regarding the class of numbers for which $R(x)$ is a maximum, I am not able to get anything except the following almost trivial results.

Obviously when $R(x)$ is maximum as a function of x , then it is for numbers for which $R(x)$ is greater than that for any lower number. Let us call such numbers L . Let t_1, t_2, t_3, \dots be the L 's in order from the beginning. Then, it is easily seen that

$$(1) \quad t_r = p(t_r) + t_{r-1}$$

$$(2) \quad R(t_r) = r$$

(3) The L 's are alternately odd and even.

(4) two consecutive L 's are relative primes.

For,
$$t_r = p(t_r) + t_{r-1}$$

and
$$p(t_r) > t_{r-1}$$

$$\therefore \{p(t_r), t_{r-1}\} = 1$$

$$\therefore (t_r, t_{r-1}) = 1$$

(5) The Ratio of two consecutive L 's tends to ∞

Proof. Since $p(t_r) = t_r - t_{r-1}$ there should be no prime between t_r and $t_r - t_{r-1}$. But when t_r is large, there is at least one

prime between t_r and $t_r \left\{ 1 - \frac{1}{\log^s t_r} \right\}$

Therefore, we should have

$$p(t_r) \geq t_r \left\{ 1 - \frac{1}{\log^s t_r} \right\}$$

$$\therefore t_r - t_{r-1} \geq t_r \left\{ 1 - \frac{1}{\log^s t_r} \right\}$$

$$\therefore \frac{t_r}{t_{r-1}} \geq \log^s t_r; \text{ for every positive } s, \text{ when } t_r \text{ is large. On}$$

the Riemann hypothesis, we get

$$\frac{t_r}{t_{r-1}} > t_r^{\frac{1}{2} - \delta}$$

$$t_r > t_{r-1}^{2-2\delta}$$

Hence, the L's increase with great rapidity.

So, it is very difficult to calculate even the first few L's. The first four L's are

$$1 = 1$$

$$4 = 3 + 1$$

$$27 = 23 + 3 + 1$$

$$1354 = 1327 + 23 + 3 + 1.$$

The fifth L may be calculated; but I do not think that it will be possible to calculate the sixth L.

5. We have proved the result

$$R(x) = o(\log x)$$

assuming all the known results about $\pi(x)$. But by elementary method also, we can prove something about $R(x)$. Now, by Bertrand's postulate, there is at least one prime between n and $\frac{n}{2}$ which is an elementary result. So

$$p(n_1) \geq \frac{n_1}{2}$$

So, since $n = n_1 = n_2 + p(n_1)$

$$n_2 \leq \frac{n}{2}$$

Similarly, $n_3 \leq \frac{n_2}{2} \leq \frac{n}{2^2}$

$$n_r \leq \frac{n_{r-1}}{2} \leq \frac{n}{2^{r-1}}$$

Now let n_r be a prime or 1. Then $n_{r+1} = 0$ and $n_r \geq 1$.

So $2^{r-1} \leq n$

$$\therefore r \leq \frac{\log n}{\log 2} + 1 < 2 \log n$$

Thus, we have proved the following results

- (1) $R(x) < 2 \log x$ (Elementary)
- (2) $R(x) = o(\log x)$ (deep)
- (3) $R(x) < 2 \log \log x$ (On Riemann hypothesis).

Further, we have shown by elementary methods that $\max. R(x)$ tends to ∞ . About the lower limit for the maximum order of $R(x)$, I am not able to do anything further than what I prove by elementary methods. In this direction one can improve the results if one can sharpen the results about the following function.

Let $P(n)$ be the smallest prime P such $Q - P > n$, where Q is the prime immediately succeeding P . Then, the following results can be proved about $P(n)$:—

$$(1) \quad 2n < P(n) < e^{2n} \quad (\text{elementary})$$

$$(2) \quad n (\log n)^t < P(n) < e^{(1+\delta)n} \quad \text{for every positive } t \text{ and } \delta \text{ when } n \text{ is large. (deep)}$$

$$(3) \quad P(n) > n^{2-\delta} \text{ for every positive } \delta \text{ (on assuming Riemann hypothesis).}$$

If the upper limit for $P(n)$ can be reduced, then, one can improve the result about the lower limit for the maximum order of $R(x)$. If p and q are two consecutive primes, then $q - p > p^{1/2-\epsilon}$ for infinity of p 's. Hence, it is not unlikely that $P(n) < n^{2+\delta}$, and consequently $R(x) > k \log \log x$ for infinity of x 's.

On a Metrical Invariant connected with four Coplanar Points.

By

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1. We define the θ normal to a curve at any point P, as the line obtained by rotating the tangent at P, in the positive sense about P, through an angle θ . It is known that for a given value of θ four such normals may be drawn to a conic from any point in its plane. The feet of these normals form a " θ -pedal tetrad" on the conic, the properties of which as tetrads on the conic have received some attention.¹

In this paper we study such tetrads not as points on their home conic, but as point sets in the plane. A set of four points in a plane requires 8 constants for its complete specification, while an arbitrary conic and an arbitrary point involve among themselves only 7 constants. It is therefore to be expected that when θ has been fixed, the θ -pedal tetrads are metrically specialised, while when θ is also allowed to vary they are quite general. This raises the following questions which are sought to be answered in this paper:—

(1) When θ is given (in particular when $\theta = \frac{\pi}{2}$) how is the pedal tetrad specialised?

(2) Given an arbitrary set of 4 points in a plane it is required to express the associated value of θ for which they form a θ -pedal tetrad as a metrical invariant of the set of four points.

As a set of four points in a plane may be taken as the base points of a unique pencil of conics, the answers to (1) and (2) may be sought in the specialisations of the associated pencil.

1. *Encyclopadie der Mathematischen Wissenschaften* III. C. 1, Kegelschnitte und Kegelschnittssysteme pp. 33, 34. Also: Vaidyanathaswami "On the quasi-normals of a central conic," *Journal of the Indian Mathematical Society*, Vol. XVIII. Part 2. Page 281.

2. Let C be a given conic subjected to an infinitesimal similarity transformation. This may be resolved into an infinitesimal rotation through an angle ϕ about the centre of similitude O and a uniform dilatation about O in the ratio $1 + \delta k : 1$. It will be seen that as a result of these operations, any point P moves so that PO is the θ normal at P where

$$\tan \theta = -\frac{\delta \phi}{\delta k} \quad (2.1).$$

Thus the above transformation carries the feet of the θ normals from O to the conic, into neighbouring points on the same conic. Hence

Any θ -pedal tetrad on a conic is the intersection of the conic with the one obtained from it by a general infinitesimal similarity transformation. (2.2).

In particular when θ is a right angle $\delta k = 0$ from (2.1), and the transformation reduces to a pure rotation. Remembering that any infinitesimal displacement in a plane is necessarily a rotation, we infer that

When a conic is subjected to an infinitesimal displacement, the common points form a pedal tetrad in the usual sense, i.e., for $\theta = \pi/2$. (2.3).

3. Consider a pencil of conics given by

$$M + \lambda R = (a_1 x^2 + 2h_1 xy + b_1 y^2 + \dots) + \lambda(a_2 x^2 + 2h_2 xy + b_2 y^2 + \dots) = 0 \quad (3.1).$$

We may without loss of generality take R to be a rectangular hyperbola so that

$$a_2 + b_2 = 0, \quad (3.2).$$

since in general every pencil contains a unique rectangular hyperbola. If the base points are orthocentric, so that every conic of the pencil is a rectangular hyperbola, R may be any member of the pencil.

The two parabolas in the pencil are then given by

$$C_\lambda = a_\lambda b_\lambda - h_\lambda^2 = (a_1 + \lambda a_2)(b_1 + \lambda b_2) - (h_1 + \lambda h_2)^2 = C_1 + \lambda C_{12} + C_2 \lambda^2 = 0.$$

If we now take M as the conic in the pencil such that the parameters of M and R separate harmonically those of the two parabolas we have

$$C_{12} = a_1 b_2 + a_2 b_1 - 2 h_1 h_2 = 0 \quad (3'3).$$

The angle ψ between the asymptotes of the conic (3.1) is given by $\frac{1}{4} \tan^2 \psi = \frac{h_\lambda^2 - a_\lambda b_\lambda}{(a_\lambda + b_\lambda)^2} = - \frac{C_1 + C_2 \lambda^2}{(a_1 + b_1)^2}$ by (3.2) and (3.3).

The two conics $M + \lambda R$ and $M - \lambda R$ have thus the same asymptotic angle and hence the same eccentricity. When these are identical, i.e., in the case of M and R the eccentricity will be an extremum.

Hence assuming that the base points are not orthocentric, we have :—

In every pencil of conics there are pairs of conics with equal eccentricities. These pairs belong to an involution whose double members are the rectangular hyperbola R and the conic M whose axes are parallel² to the asymptotes of R . The eccentricity is a minimum in the case of M and a maximum for R . (3.4).

Since all parabolas have the same eccentricity, the two parabolas in the pencil belong to the involution and their parameters separate harmonically those of M and R .

When the base points are orthocentric all the conics have the same eccentricity $\sqrt{2}$, and any two conics of the system are similar. In particular each conic is similar to its neighbours in the pencil.

In the general case, however, if two neighbouring conics are to have the same eccentricity they must be of the form

$$M + \delta\lambda. R \text{ and } M - \delta\lambda. R \quad \text{or} \quad \delta\lambda. M + R \text{ and } \delta\lambda. M - R$$

In order, however, that it may be possible to carry one conic into the other by a similarity transformation, the conics must not only have the same asymptotic angle, but must in both cases lie within the acute angle or obtuse angle. In the case of the conic M , the asymptotic angle is not a right angle and considerations of continuity lead to the conclu-

2. This is a geometrical interpretation of (3.3) which states that the asymptotes of R separate harmonically those of M and are therefore equally inclined to them.

sion that the two conics $M + \delta\lambda R$ whose equations differ infinitesimally from each other must be either both within the acute or both within the obtuse angle. These considerations do not hold in the case of $R + \delta\lambda \cdot M$; for we may have two conics one lying within the angle $\frac{\pi}{2} + \epsilon$ and another within the angle $\frac{\pi}{2} - \epsilon$ and differing infinitesimally from each other. Further investigation shows that this is indeed the case and that the conics $R + \delta\lambda \cdot M$ are not similar but conjugate hyperbolas. Thus:

The only conics of the system similar to their neighbouring conics are those in the neighbourhood of M.

We may now seek to find the rotation $\delta\phi$ and the dilatation $1 + \delta k$:1 necessary to carry $M - \delta\lambda \cdot R$ into $M + \delta\lambda \cdot R$ so that the formula (2.1) may be applied to determine the pedal angle of the tetrad formed by the base points of the pencil.

4. Consider now the effect of an infinitesimal similarity transformation on the points at infinity on $M - \delta\lambda \cdot R = 0$ which are given by

$$(a_1 x^2 + 2h_1 xy + b_1 y^2) - \delta\lambda (\alpha_2 x^2 + 2h_2 xy + b_2 y^2) = 0 \quad (4.1)$$

While the dilatation component leaves them invariant, the rotation through $\delta\phi$ carries them into the points given by

$$(a_1 x^2 + 2h_1 xy + b_1 y^2) - \delta\lambda (\alpha_2 x^2 + 2h_2 xy + b_2 y^2) - 2\delta\phi (h_1 x^2 - h_1 y^2 + b_1 - a_1 xy) = 0 \quad (4.2)$$

omitting terms of the second order involving $\delta\lambda \cdot \delta\phi$. If these are to be identical with the points at infinity on $M + \delta\lambda \cdot R = 0$ we must have

$$\begin{aligned} \frac{a_1 - \delta\lambda \alpha_2 - 2h_1 \delta\phi}{a_1 + \alpha_2 \delta\lambda} &= \frac{h_1 - h_2 \delta\lambda + (a_1 - b_1) \delta\phi}{h_1 + h_2 \delta\lambda} = \frac{b_1 - b_2 \delta\lambda + 2h_1 \delta\phi}{b_1 + b_2 \delta\lambda} \\ &= \sqrt{\frac{(a_1 b_1 - h_1^2) - \delta\lambda (\alpha_2 b_1 + a_1 b_2 - 2h_1 h_2)}{(a_1 b_1 - h_1^2) + \delta\lambda (\alpha_2 b_1 + a_1 b_2 - 2h_1 h_2)}} \text{ approx.} \\ &= 1 \text{ by (3.3).} \end{aligned}$$

Passing to the limit when $\delta\lambda \rightarrow 0$ we have:

$$\frac{d\phi}{d\lambda} = -\frac{a_2}{h_1} = \frac{2h_2}{a_1 - b_1} = \frac{b_2}{h_1} = 2 \sqrt{\frac{h_2^2 - a_2 b_2}{(a_1 - b_1)^2 + 4h_1^2}} = \sqrt{\frac{-4C_2}{J_1^2 - 4C_1}} \quad (4.7)$$

$$\text{where } \left. \begin{aligned} J_1 &= a_1 + b_1 \\ J_2 &= a_2 + b_2 = 0 \end{aligned} \right\} \quad \left. \begin{aligned} C_1 &= a_1 b_1 - h_1^2 \\ C_2 &= a_2 b_2 - h_2^2 \end{aligned} \right\} \quad (4.8)$$

and the square root is to have the same sign as $\frac{b_2}{h_1}$

When all the conics are rectangular hyperbolas the above investigation still holds so long as M and R are any two conics satisfying (3.3).

In this case both J_1 and J_2 vanish so that $\frac{d\phi}{d\lambda} = \sqrt{\frac{C_2}{C_1}}$

5. We have next to determine $\frac{d k}{d \lambda}$ where $1 + \delta k : 1$ is the dilatation in passing from the conic $M - \delta \lambda, R$ to the neighbouring similar conic $M + \delta \lambda, R$

The product of the squares of the semi-axes of a conic S are given by $P = \frac{\Delta^2}{C^3}$ where Δ is the discriminant, and $C = ab - h^2$.

Hence for the conic $M + \lambda R$ we have $P_\lambda = \frac{\Delta_\lambda^2}{C_\lambda^3}$

$$\frac{dP_\lambda}{P_\lambda} = \frac{2 d\Delta_\lambda}{\Delta_\lambda} - 3 \frac{dC_\lambda}{C_\lambda} \quad (5.1).$$

But we have

$$\Delta_\lambda = \lambda^3 \Delta_{222} + \lambda^2 \theta_{122} + \lambda \theta_{112} + \Delta_{111}$$

where the Δ 's are the discriminants and θ 's the joint invariants of M and R , while

$$C_\lambda = C_1 + C_{12} \lambda + C_2 \lambda^2$$

where C_1, C_2 are given by (4.8) and $C_{12} = a_1 b_2 + a_2 b_1 - 2h_1 h_2 = 0$ from (3.3).

Hence as we pass from $M - \delta \lambda, R$ to $M + \delta \lambda, R$

$$d\Delta_\lambda = 2\theta_{112} d\lambda; \quad dC_\lambda = 0$$

to the first order of small quantities, so that

$$\frac{dP_\lambda}{P_\lambda d\lambda} = 4 \frac{\theta_{112}}{\Delta_{111}}$$

But if the dilatation be in the ratio $1 + \delta k : 1$

$$\frac{dP_\lambda}{P_\lambda} = \frac{P_\lambda (1 + \delta k)^4 - P_\lambda}{P_\lambda} = 4 \delta k$$

omitting δk^2 etc., since P_λ is of dimensions four in length.

We have therefore in the limit when $\delta\lambda \rightarrow 0$

$$\frac{dk}{d\lambda} = \frac{\theta_{112}}{\Delta_{111}} \quad (5.2).$$

6. We have now all the materials for determining the pedal angle of any tetrad of points A B C D. By (2.2) A B C D will be a pedal tetrad on that conic of the pencil which is similar to a neighbouring conic of the pencil. Using (3.5) we infer that

Any coplanar tetrad of points forms a pedal tetrad on the conic M of minimum eccentricity through them in the case of an ordinary tetrad, and on every conic of the pencil in the case of an orthocentric tetrad. The pedal angle θ is then given in both cases by

$$\tan \theta = - \frac{\Delta_{111}}{\theta_{112}} \sqrt{\frac{-4C_2}{J_1^2 - 4C_1}} \quad (6.1)$$

The last part follows from $\tan \theta = - \frac{d\phi}{dk} = - \frac{d\phi}{d\lambda} \bigg/ \frac{dk}{d\lambda}$ as we pass from the conic $M - d\lambda \cdot R$ to the neighbouring similar conic $M + d\lambda \cdot R$.

In particular when $\theta_{112} = 0$, $\theta = \frac{\pi}{2}$ so that M is inpolar to R. In fact it is well known that the feet of the normals from a point to a conic M lie on the Apollonius hyperbola R passing through the centre and the points at infinity on the axes of M, and these points form a triangle self-polar with respect to M. We notice also that another case when $\theta = \frac{\pi}{2}$ is when $J_1^2 - 4C_1 = (a_1 - b_1)^2 + 4h_1^2 = 0$ which is the condition that M passes through one of the circular points. If the four points are real, so are the coefficients in M and R, so that in this case M is a circle.

The case when $\theta = 0$ i.e., the tangents at A B C D are concurrent will occur only when M is a pair of straight lines and accordingly we find Δ_{111} figuring as a factor in the numerator of (6.1). The vanishing of the other C_2 , coupled with $a_2 + b_2 = 0$ will involve in the case of real tetrads $a_2 = b_2 = h_2 = 0$ so that R breaks up into the line at infinity and another straight line. This can happen only when two of the points A B C D be at infinity.

The expression in (6.1) is homogeneous and of degree zero in the coefficients of the M and R so that it will not be affected by multiplying the equation of either conic by any constant. The invariant character of (6.1) for the transformations of the orthogonal group is perceived from the fact that the conics M and R are metrically specialised members of the pencil which will be carried into the corresponding members M' and R' of the transformed pencil, while Δ, θ are the projective invariants, and J, C, metrical invariants of these specialised members.

7. When the tetrad A B C D is orthocentric, M and R are any two members of the pencil satisfying (3.3) and the pedal angle θ for which θ -normals to M are concurrent is given by

$$\tan \theta = - \frac{\Delta_{111}}{\theta_{112}} \sqrt{\frac{C_2}{C_1}}$$

If any member $M + \lambda R$ be taken, this together with $M + \mu R$ satisfy (3.3) if

$$\lambda\mu + \frac{C_1}{C_2} = 0 \quad (7.1).$$

The pedal angle θ_λ for which the base points form a pedal tetrad on the conic $M + \lambda R$ is given by

$$\tan \theta_\lambda = - \frac{\omega_{\lambda\lambda\lambda}}{\theta_{\lambda\lambda\mu}} \sqrt{\frac{C_\mu}{C_\lambda}} \quad (7.2).$$

Let us write,

$$\Delta_{\lambda\lambda\lambda} = a_\lambda^3; \quad C_1 + \lambda^2 C_2 = p_\lambda^2 = q_\lambda^2 = r_\lambda^2$$

where p, q, r are equivalent symbols for the quadratic giving the two parabolas. Then $\theta_{\lambda\lambda\mu}$ being the polar form of $\Delta_{\lambda\lambda\lambda}$ with respect to μ is represented by $3a_\lambda^2 a_\mu$, while the relation (7.1) between λ and μ takes the form

$$p_\lambda p_\mu = q_\lambda q_\mu = r_\lambda r_\mu = 0 \quad (7.3).$$

On substituting the above value for μ we have

$$\theta_{\lambda\lambda\mu} = 3 a_\lambda^2 a_\mu = 3 (ap) a_\lambda^2 p_\lambda$$

Again, from (7.3), $p_\mu = (pq) q_\lambda = (pr) r_\lambda$ so that

$$p_\mu^2 = (pq) (pr) q_\lambda r_\lambda = \frac{1}{2} (pq) r_\lambda \left\{ (pr) q_\lambda + (rq) p_\lambda \right\}$$

on interchanging the equivalent symbols p and q .

$$= \frac{1}{2} (pq)^2 r_\lambda^2 = \frac{1}{2} (qr)^2 p_\lambda^2$$

$$\text{Hence } \frac{C_\mu}{C_\lambda} = \frac{p_\mu^2}{p_\lambda^2} = \frac{1}{2} (qr)^2 = \text{discriminant of } p_\lambda^2.$$

Substituting these values in (7.2) we have

$$\sqrt{(pq)^2} a_\lambda^3 + 3\sqrt{2} \tan \theta (ap) a_\lambda^2 p_\lambda = 0 \quad (7.4).$$

Hence, summarising

An orthocentric tetrad is a pedal tetrad for every conic through the points, for the value θ given by (7.2); while for a given value of θ there are three conics given by (7.4) for which θ -normals are concurrent. Such triads belong to a pencil determined by a_λ^3 giving the parameters of the line pairs, and b_λ^3 the jacobian of a_λ^3 and the quadratic $p_\lambda^2 = 0$ which gives the two parabolas in the system. The pedal angle is zero for the conics given by $a_\lambda^3 = 0$ and is a right angle for those* for which $b_\lambda^3 = 0$. For any other conic of the system the pedal angle is given by (7.4).

If the roots of $p_\lambda^2 = 0$ are p_1 and p_2 , it is easy to see that the residual quadratics of p_1 and p_2 respectively in such a pencil are the polars of p_2 and p_1 with respect to a_λ^3 . This gives an alternative mode of specifying the pencil.

*For some geometrical properties regarding the centers of such rectangular hyperbolas, reference may be made to a paper by Dr. Vaidyanathaswami; "On the feet of concurrent normals of a conic" *Journal of the Indian Mathematical Society*, Vol. XVIII page 309.

Chemical Investigation of Indian Medicinal Plants.

PART I.

Preliminary Chemical Examination of the root bark of Capparis Horrida.

By

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One of us (S. N. C.) has been contemplating a systematic Investigation of Indian Medicinal plants for the last ten years. The object of this series of researches was to isolate the active principles of the medicinal plants with a view to determine their structures as also to study their physiological and Pharmacological action from a scientific point of view. We were interested in these studies from another point of view also. In spite of the pioneer work of Ehrlich, no far reaching generalisation has yet been discovered connecting chemical constitution of a substance with its physiological and chemotherapeutic action, this branch of medical science consisting merely of a series of empiricism hardly deserving the name of science. This is a problem which has been engaging our attention for the last few years, and we thought that by a systematic study of the chemical structure of the active principles of the various plants it may be possible to gather some material which may be of use in arriving at a generalisation of far reaching importance connecting chemical constitution and physiological and chemotherapeutic action.

The present paper deals with the preliminary investigation of the root bark of *Capparis-horrida*, a climbing shrub which thrives well in the Gangetic Valley and South India. The root bark is variously used by indigenous doctors as a cure for cholera, and also as sedative, stomachic and anti-idriotic. The root bark is supposed to be useful in relieving some of the symptoms of gastric irritation, as vomiting and pain, and in improving appetite. It has also been found useful in a few cases of excessive perspiration which it checked to a great extent.

A reference to the literature showed that no work had been done on the chemical constituents of this plant. A more or less complete and systematic analysis of the root bark has now been made. This investigation shows that the active principle of the root bark is an alkaloid with some remarkable properties.

A sample of the new alkaloid has been sent to Col. R. N. Chopra, I.M.S., of the Tropical School of Medicine, Calcutta, for the study of its physiological and Pharmacological action.

Experimental. Preliminary tests carried out in the usual manner (Compare Rosenthaler Grundzuge der Chemischen Pflanzenuntersuchung, pages 15 to 18) indicated the presence of an alkaloid and absence of glucosides and tannins.

In order to ascertain the general character of the constituents, 60 g. of the air-dried, finely-powdered, root bark were extracted with the following solvents successively in a soxhlet apparatus, and the extracts were dried at 100°:—

Petroleum ether (B.P. 35-40°) extracted	..	33%
Ethyl ether	..	33%
Chloroform	..	25%
Absolute alcohol	..	7%
70% alcohol	..	10%
		<hr/>
Total	..	261%

Petroleum Ether extract. The yellowish extract was concentrated to a small volume and then extracted with acidified water. The acid extract did not give any precipitate with any of the usual alkaloidal reagents, and it did not give any of the tests of water soluble glucoside. The concentrated petroleum ether extract was then evaporated to dryness, when a brownish residue (2 g) was left. The residue was boiled with 90% alcohol, when a part did not dissolve. The insoluble residue was not saponified by boiling with alcoholic potash for 4 hrs. The hot alcoholic filtrate deposited on cooling a small amount of a substance (.05 g.) which gave some of the tests of phytosterols. The final mother liquor was evaporated to dryness when a resinous substance, which did not give any of the tests of a glucoside or tannin, was obtained.

Ethyl Ether extract. This extract residue (2 g.) was very much similar to the residue obtained from petroleum ether. It did not contain any reducing sugar, tannin, glucoside, alkaloid, or an acid. It contained a non-saponifiable substance, traces of an essential oil, a small amount of a phytosterol and some resinous substance.

Chloroform extract. A dark brown sticky residue, which did not contain any glucoside, reducing sugar, alkaloid or tannin. On boiling with 90% alcohol an insoluble residue is left, which is not saponified by

boiling with alcoholic potash. The hot filtrate deposited a very small amount of a phytosterol. On evaporating the mother liquor to dryness, a cautchoue-like substance was obtained which did not dissolve in sodium hydroxide.

Absolute Alcohol extract. On concentrating down the extract to a small volume a crystalline substance separated which did not melt even at 260° , and which was found to be a potassium salt, and not a glucoside. Ether was added to the alcoholic filtrate when a light yellow precipitate was thrown down. Part of this precipitate is soluble in dilute hydrochloric acid and gives tests for alkaloids. The part that is insoluble dissolves readily in sodium hydroxide and is reprecipitated by acids.

The ether-alcoholic solution was concentrated and lead acetate was added. There was a slight precipitation. The precipitate was soluble in boiling alcohol and on concentration gave a pale green sticky substance, soluble in sodium hydroxide. The filtrate from the precipitate gave no precipitate with basic lead acetate.

70% Alcohol extract. On concentrating down the extract to a small volume, a crystalline substance separated (2 g.) which was found to contain calcium. On further concentration, 15 g. more of a substance was deposited. Both these precipitates contained traces of an alkaloid. The mother liquors from these precipitates were evaporated to dryness, the residue extracted first with water and then with dilute hydrochloric acid. The extracts contained only traces of an alkaloid and an acid. The extracted residue was insoluble in water, chloroform, ether and sodium hydroxide.

Cold distilled water extract. The extract contained some protein and alkaloid.

Cold 1% hydrochloric acid extract. The extract gave voluminous precipitate with all the usual alkaloidal reagents.

Boiling water extract of the fresh bark. 200 g. of the powdered bark were boiled with a litre of distilled water for 4 hours. The filtrate from the bark was treated with slight excess of lead acetate, when a voluminous white precipitate (A) was thrown down, which was washed with lead acetate and then with water till the washings were no longer acidic to litmus. On decomposing the precipitate with hydrogen sulphide, a very small amount of a water soluble acid, and a mucilaginous substance was obtained. The filtrate from (A) was freed from lead, by passing hydrogen sulphide and filtering, and then concentrated

to a small bulk. A crystalline substance (7 g.) gradually separated, which did not melt even at 260° . It gave tests for calcium sulphate. On diluting the filtrate with absolute alcohol a mixture of calcium and potassium sulphates (1.6 g.) was precipitated. The filtrate from this was treated with basic lead acetate when a very slight precipitate (F) was obtained. All attempts to obtain crystalline products from the decomposition product of (B) were unsuccessful. The filtrate from (B) was freed from lead, and evaporated to dryness. The residue could not be obtained in a crystalline form, but it reduced fehling's solution and also gave tests for alkaloids. On being heated with phenylhydrazine in dilute acetic acid solution for 15 minutes on the water bath it gave an osazone which after repeated crystallisations melted at 209° . A mixed melting point with glucosazone caused no depression in the melting point.

Isolation of the alkaloid. A number of comparative experiments were first tried with a view to arrive at conditions under which the optimum yield of the alkaloid could be obtained. The following methods were tried:—(1) Extraction with neutral liquids viz. alcohol, chloroform and water; (2) Extraction with acidic solutions, viz. extraction with 1-2% hydrochloric, acetic or tartaric acid solutions in alcohol; (3) The powdered material mixed with quicklime, and dried on the water-bath and then extracted with benzene.

Very poor yields were obtained by the methods (1) and (3). A maximum yield of 10 g. of the crude periodide for 100 g. of the bark was obtained when the bark was extracted with 1.5% hydrochloric acid for 60 hours on the water-bath. On further heating for 40 hours with 1.6% hydrochloric acid, another 5 g. of the periodide was obtained, but the product was contaminated with impurities.

Eventually the following method was adopted, which gave a purer product but a poorer yield:—

100 g. of the bark was repeatedly extracted with 1.6% hydrochloric acid solution in the cold in a percolator till no more was extracted. The extract was treated with a solution of iodine potassium iodide till no more precipitate was thrown down. The precipitate was allowed to settle, and then filtered. On drying the periodide which was obtained as a dark brown powder weighed 2 g. The periodide was suspended in hot water and decomposed by passing sulphur dioxide. A clear yellow solution was obtained from which the iodide separated as a yellow powder. The filtration from this precipitate was a very slow process. On repeated crystallisation from water, the iodide separated as a yellow powder which did not melt even at 300° C.

On dissolving the iodide in water and adding ammonia in slight excess and then boiling off the excess of ammonia, the free alkaloid is precipitated. It seems to be soluble in excess of ammonia. It was insoluble in usual organic solvents and in water. It readily dissolves in dilute acids giving voluminous precipitates with all the usual alkaloidal reagents. The crude alkaloid did not melt even at 260° C.

An acid solution of the alkaloid on treatment with picric acid gives a yellow picrate. The picrate was insoluble in water, alcohol or acetic acid, but it dissolved readily in a mixture of water and acetone or acetic acid. It comes out from this mixture as a yellow powder which decomposes at 225° C.

2 g. of the iodide was converted into the chloride by heating with excess of silver chloride in aqueous solution. Unfortunately the chloride so far could not be obtained in a crystalline state.

The study of the composition and constitution of these compounds is reserved for a future paper.

Chemical Investigation of Indian Medicinal Plants.

PART II.

Preliminary Chemical Examination of the leaves of Pithecolobium Bigeminum.

By

SATYENDRANATH CHAKRAVARTI AND KRISHNAMURTI GANAPATI

(Annamalai University.)

Pithecolobium Bigeminum is a large tree which is commonly met with in the forests of the outer Himalayas and in South India. The leaves of this plant is used in Ayurvedic Medicine as a cure for leprosy and also as a stimulant to promote the growth of hair. The plant has also long been used in other systems of Indian Medicine as also in European countries. (Compare Rosenthaler, Z. Oesterr. Apoth. Ver. 1906, 44, 147.).

From the bark of this plant Greshoff isolated an amorphous alkaloid which has not yet been investigated (Ber, 1890, 23, 3541). A few years later, Rosenthaler isolated a saponin from the same plant (loc. cit.). We reserve for a future paper an account of the analytical experiments which are in progress for determining the constitution of the alkaloid present in the bark.

A reference to the literature showed that very little work had been done on the Chemical constituents of the leaves. The present investigation was undertaken to fill up this gap and also to elucidate, as far as possible, the Chemical constitution of the active principle present in the leaves.

The point of general interest which emerges from this investigation is that the leaves do not contain, even traces of an alkaloid, and that the active principle is a mixture of two acids, one of which is easily soluble in water but not readily in alcohol or ether, and the other is readily soluble in alcohol but not in water. The characterisation and the constitutions of these acids are reserved for a future paper.

Experimental. Preliminary tests carried out in the usual manner (Compare Rosenthaler Grundzuge der Chemischen Pflanzennutrition, pages 15 to 18) indicated the presence of acids, saponins, en-

zymes and traces of essential oil, and absence of alkaloids, glucosides and tannins.

In order to ascertain the general character of the constituents, 45 g. of the air dried ground leaves were extracted with the following solvents successively in a Soxhlet apparatus and the extracts were dried at 100° :—

Petroleum ether (B.P. 35°—40°) extracted	..	2 %
Ethyl Ether	..	·7%
Chloroform	..	2·1%
Absolute alcohol	..	3·4%
70% alcohol	..	3·2%
		<hr/>
Total	..	11·4%
		<hr/>

Petroleum Ether extract. On cooling the hot petroleum ether extract deposited a leafy grey white substance (A) (·15 gm.). It dissolves readily in hot petroleum ether, ether and alcohol. From all these solvents it separates in an amorphous form. It is insoluble in hot water and it does not dissolve either in cold hydrochloric acid or sodium carbonate. It does not give any of the tests of alkaloids, glucosides, sugars, waxes or phytosterols. It is not an acid and gives an indefinite melting point. This substance is being further investigated.

The filtrate from (A) was extracted with acidified water, dried over sodium sulphate and the solvent removed, when a green pasty mass was left. The acid extract did not give any precipitate with any of the usual alkaloidal reagents, and it did not give any of the tests of water soluble glucosides. The green pasty mass was boiled with 90% alcohol. On filtering hot a green solution was obtained, and a residue (B) (·15 g.) which turned dark and pasty on exposure to air. The residue, on being boiled for four hours with alcoholic potash, was partly saponified. The residue was found to be a mixture of fatty and unsaponifiable matter.

The green hot solution deposited on cooling a green substance (C) (·25 g.). The filtrate from (C) on being evaporated to dryness gave a resinous residue (D).

The substance (C) gave most of the tests of Phytosterols. On re-crystallisation from alcohol it melted between 245-250°. The residue (D) was found to be a mixture of a resinous substance, and a solid volatile product which could be steam-distilled.

Ethyl Ether extract. The ethereal solution was extracted, after concentration, with very dilute hydrochloric acid, and then evaporated to dryness when a green pasty residue was obtained. The acid extract did not give any tests for glucosides or alkaloids. The residue was boiled with 90% alcohol when a part (A) was left undissolved (·05 gm.).

(A) was left as a dark green powder. It has a pleasant smell and is insoluble in water, sodium hydroxide and hydrochloric acid. It is also insoluble in benzene and only very sparingly soluble in chloroform or acetic acid. It does not melt even at 280° and it does not give any of the tests of Phytosterols. On boiling for 3 hours with alcoholic potash, only part of the substance was saponified.

The filtrate from (A) was evaporated to dryness when a dark resinous substance was obtained. Part of this substance was soluble in sodium carbonate solution. The part that did not dissolve in sodium carbonate solution was found to be insoluble also in caustic potash and glacial acetic acid, but was soluble in chloroform and acetone. This substance did not give any of the tests of phytosterols, lecithins, alkaloids, etc. Attempts to obtain any crystalline materials from this were unsuccessful.

The part that was soluble in sodium carbonate was re-precipitated on acidification and was found to be an acid.

Chloroform extract. A dark green residue was obtained. A very small part of it was soluble in sodium carbonate and this part was found to be an acid. The part that was insoluble in sodium carbonate was found to be insoluble also in cold caustic potash or hydrochloric acid. It did not give any tests for tannins, alkaloids or phytosterols. It was found to contain some colouring matter, some resinous substance, and an indifferent substance, m.p. 132-35.

Absolute Alcohol extract. Nothing separated on cooling the extract or on concentrating it down to a small volume, indicating the absence of salts, saponins, glucosides, etc. To a little of the concentrated extract, ether was added when a small amount of a substance, which was neither an alkaloid nor a glucoside, was precipitated. The ether-alcoholic solution was evaporated to dryness. The residue does not give the tests of an alkaloid or a glucoside, but was found to contain an acid. On evaporating the original alcoholic extract to dryness, a green residue was obtained. The residue was extracted with sodium carbonate solution. On acidifying the sodium carbonate extract, a precipitate was obtained, indicating the presence of an acid. This substance is sparingly soluble in water. On attempting to crystallise it

from alcohol with the aid of animal charcoal, an amorphous grey powder was obtained which decomposes at 272° .

The part of the residue that was insoluble in sodium carbonate, could not be so far obtained in a crystalline form.

70% Alcohol extract. A brown residue having properties similar to that of the absolute alcoholic extract.

Cold distilled water extract. During the extraction there was much frothing indicating the presence of saponins. The extract did not contain any alkaloid, glucoside bitter or phenolic substances. On a little of the extract being treated with absolute alcohol, a very slight precipitate was obtained. The rest of the extract was then treated with lead acetate solution, when a bulky dark precipitate (A) was obtained. The precipitate was filtered, washed successively with lead acetate solution, acetic acid and then water, suspended in water and decomposed by passing hydrogen sulphide. The filtrate from lead sulphide precipitate was concentrated, after animal charcoaling, to a small volume, when a brown, more or less crystalline substance separated. This substance was soluble in sodium carbonate solution, but did not dissolve readily in alcohol, benzene or ether. It was readily soluble in water, contained nitrogen, and did not melt even at 280° . It may be an amino acid.

The filtrate from (A) was freed from excess of lead acetate by passing hydrogen sulphide through the solution, when lead was precipitated as sulphide. The filtrate was concentrated to a small bulk and a solution of basic lead acetate was added. Only a slight turbidity appeared.

Extract with boiling water. The extract was more or less similar to the previous extract. It contained in addition a larger amount of gummy substances. It did not contain any alkaloid, glucoside or tannins.

Cold 1% hydrochloric acid extract. The extract did not contain any alkaloid. The extract contained calcium and traces of magnesium in the form of salts.

Isolation of the acids. Preliminary experiments. *Water soluble acid.* 500 gms. of the finely powdered material was heated on the steam-bath with 2 litres of water for six hours and filtered hot. The extraction was repeated three or four times. A slight excess of lead acetate solution was added to the combined extract when most of the acid was precipitated as a lead salt. The lead salt was filtered off next day, washed with lead acetate, acetic acid and finally with water till free from acetic acid. The precipitate (4 gm.) was finely pow-

dered, suspended in water and decomposed by means of hydrogen sulphide. The filtrate from lead sulphide was concentrated in vacuo and finally evaporated to dryness. The residue (·5 gm.) was very readily soluble in water and only sparingly soluble in absolute alcohol, or glacial acetic acid. Attempts to obtain it in a crystalline form from any of the solvents have so far been unsuccessful. The substance is unsaturated, turns black on exposure and readily decolourises permanganate. It contains nitrogen.

Experiments to purify it, though the purification of its ester or barium or silver salts, are in progress. It is also proposed to study the bromination and reduction product obtained from it.

From the filtrate from the lead salt, excess of lead was removed by passing hydrogen sulphide. The filtrate was concentrated to a small volume when calcium sulphate separated. On still further concentrating the mother liquor and allowing to cool a small amount of a mixture of calcium and magnesium salts was obtained. The last mother liquor was evaporated to dryness when a residue was obtained which gave some of the tests of carbohydrates, but which did not reduce fehling solution. In another experiment attempts to obtain crystalline products through the addition of alcohol or basic lead acetate to the concentrated mother liquors were unsuccessful. The last residue did not form either a phenyl-hydrazone or an osazone.

Isolation of the second acid. 500 gms. of the above material which had been completely extracted by means of water was dried on the steam-bath and then boiled for six hours on the water-bath with 2 litres of alcohol. Alcohol was filtered hot and the leaves were repeatedly extracted with alcohol till the residue was completely exhausted. The combined extracts were concentrated to a small volume and allowed to remain overnight. Next morning nothing separated. The solution was therefore evaporated to dryness. The residue (5·5 gm.) was shaken up with sodium carbonate solution and the latter solution acidified. On crystallising the precipitated acid from alcohol with the aid of animal charcoal, a substance was obtained which begins to decompose at 272°. The acid is unstable and readily decomposes into a dark product. It at once decolourises permanganate.

This acid differs markedly in its properties from the one previously obtained, being much more readily soluble in alcohol, acetone, acetic acid and chloroform, and much less in water.

Experiments to prepare large quantities of the acid by direct extraction of the leaves with dilute sodium carbonate solution, are in progress.

An attempted synthesis of Oxy-protoberberine and and

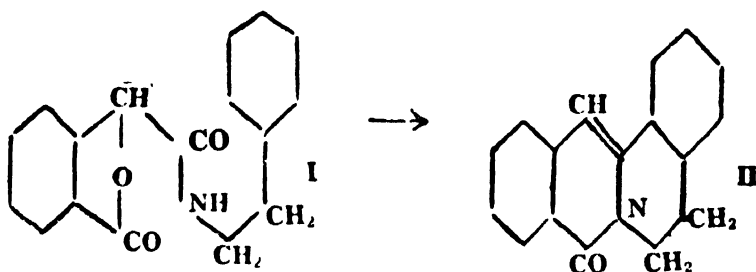
a synthesis of 3-Methoxy-oxy-protoberberine

By

SATYENDRANATH CHAKRAVARTI AND A. P. MADHAVAN NAIR

(*Annamalai University.*)

An unsuccessful attempt to synthesise Oxy-protoberberine and tetrahydro-protoberberine, the parent substance of the Berberine and Palmatine group of alkaloids, for which the name "Berbin" has recently been suggested by Walter Awe (Arch. Pharm. 1932, 270, 161), was first made by Haworth, Perkin and Pink (J. C. S. 1925, 127, 1711). These compounds were first synthesised by one of us in 1927 (J. C. S. 1927, 2275). The melting point of tetrahydro-protoberberine was found to be 85°, and numerous derivatives of this compound were prepared. In the same year Kitasato prepared a compound having the melting point 254-260°, which he called tetrahydro-protoberberine (Kitasato, Acta Phytochimica 1927, 3, 175-258; Chem. Zentral 1927, 11, 1965). In view of this discrepancy, we sought to verify our results by synthesising tetrahydro-protoberberine by another method analogous to that employed by Perkin, Ray and Robinson for synthesising Oxy-berberine (J. C. S. 1925, 127, 740). For this purpose the acid chloride of Phthalide Carboxylic acid was condensed with β -Phenylethylamine when the amide (I) m.p. 155° was formed. Unfortunately all attempts to convert the amide (I) into oxy-protoberberine, (II) were unsuccessful, undoubtedly due to the absence of activating methoxy groups.

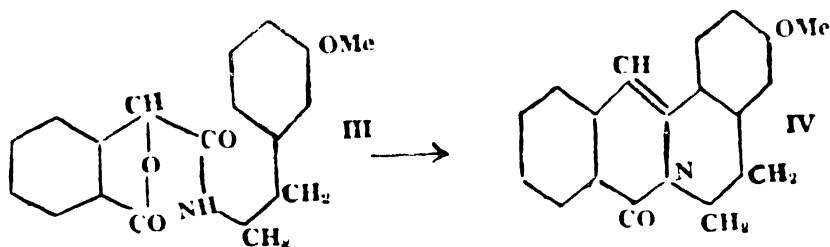


When phosphorus pentachloride was used to effect cyclisation in place of phosphorus oxychloride, a crystalline substance m.p. 153° was obtained in a poor yield. This substance was found to be quite different from oxy-protoberberine synthesised previously and its analysis did not agree with the values calculated for oxy-protoberberine.

While these experiments were in progress, Wolfgang Leithe published a paper which fully confirmed the results obtained previously by one of us. (S. N. C.) He synthesised tetrahydro-protoberberine anew by a slight modification of our previous method and found its melting point to be 85° C. (Ber., 1930, 2343). In view of this work, and the fact that Kitasato withdrew his statement in a private communication to one of us, further work on this subject was discontinued.

Incidentally, 3-Methoxy-oxy-protoberberine (IV) was synthesised—a synthesis which is of interest from the point of view of the determination of ease of formation of alkaloids of beberine-palmatine type containing no pyrocatechol nuclei (Compare Chakravarti, Haworth and Perkin, J. C. S. 1927, 2267, 2275; Chakravarti and Perkin, J. C. S. 1925, 196.).

The acid chloride of Phthalide Carboxylic acid condensed readily in benzene solution with β -m-Methoxy-phenylethylamine yielding phthalide Carboxy- β -m-Methoxy-phenylethylamide (III) m.p. 105° . When this was heated with phosphorus oxy-chloride and the product decomposed with ice, a basic substance separated (on basification of the aqueous solution), which, on reduction with Zinc dust and acetic acid, was converted into a pale yellow substance, m.p. 143° , having all the properties of a compound of the Oxy-berberine type, and this is doubtless 3-Methoxy-oxy-protoberberine (IV).



The point of general interest which emerges from this synthesis is that the synthetical experiments described proceed as readily when only one methoxy group is present in the meta position to ethylamine group, as they do in the case of the corresponding syntheses in the berberine group. The ease of formation in this case is doubtless due to the presence of an activating para methoxy group.

Experimental. *Phthalide-Carboxy β phenylethylamide* (1). Phthalide carboxylic acid (10 g.) prepared by the reduction of phthalonic acid which in its turn was prepared by the oxidation of naphthalene (Compare Ullmann and Uzbachian Ber, 1903, 36, 1805, and Graebe

and Trumpy Ber., 1898, 31, 373), was thoroughly mixed with the equivalent amount of phosphorus pentachloride and heated on the steam-bath for three hours. Phosphorus-Oxychloride formed was then completely removed by distillation in vacuo, and the residue dissolved in dry benzene and added gradually to a dry benzene solution of β phenylethylamine (prepared from 9 g. of the hydrochloride). After remaining overnight, the mixture was heated on the steam-bath for half an hour, cooled, and washed successively with sodium carbonate solution and dilute hydrochloric acid, and dried over sodium sulphate. On distilling off most of the benzene, the amide separated as a white powder (yield almost quantitative). On repeated recrystallisation from ethyl alcohol it melted at 155° (Found: C=72.8; H=5.3; $C_{17}H_{15}O_3N$ requires C=72.6; H=5.3).

An attempted synthesis of Oxy-protoberberine (II). An attempt was made to convert phthalide-Carboxy- β phenylethylamide (1) into Oxy-protoberberine, by treating the amide with phosphorus Oxychloride and then treating the basic substance thus formed with Zinc dust and glacial acetic acid exactly under conditions described by Perkin, Ray and Robinson for converting the Piperonylethylamide of meconine Carboxylic acid into oxy-berberine (loc. cit. page 742; compare also Chakravarti and Perkin J. C. S. 1929, 200). The final product obtained was a brown resinous substance which could not be obtained in a crystalline form, and which could not be further examined owing to the very poor yield. Phosphorus pentoxide in boiling Xylene solution was then tried as the cyclising agent. Again a very poor yield of the same resinous substance was obtained. When, however, phosphorus pentachloride was used as the cyclising agent, a distinctly crystalline pale yellow substance was obtained, which was repeatedly crystallised from methyl alcohol. The substance crystallises in beautiful needles, m.p. 153° , and is very readily soluble in the usual Organic solvents. (Found: C=72.2; H=4.45; N=4.3. $C_{17}H_{13}ON$ requires C=82.6; H=5.3; N=5.7%. We are indebted for this micro-analysis to Dr. Ing. A. Schoeller of Berlin).

The substance thus formed differs markedly in its properties from Oxy-protoberberine synthesised by one of us (J. C. S. 1927, 2280), and it could not be further investigated owing to the small amount of the substance at our disposal.

Phthalide-Carboxy- β m-Methoxy-phenylethylamide (III). β m-Methoxy-phenylethylamine was prepared by a slight modification of the method previously described by one of us (Chakravarti, Haworth and Perkin, J. C. S. 1927, 2269), m-hydroxybenzaldehyde being methy-

lated in the following manner in more than 90% yield:—50 g. of m-hydroxybenzaldehyde dissolved in 200 c.c. of 10% sodium hydroxide solution, is treated gradually with constant shakings with 55 c.c. of dimethyl sulphate. When all the dimethyl sulphate has been added, the mixture is further shaken for a few minutes and then warmed on the water-bath for an hour. M-methoxy benzaldehyde formed is then separated in the usual manner. M-methoxy-phenylethylamine was then condensed with the acid-chloride of phthalide—Carboxylic acid exactly under the conditions described above for the amide (I). Phthalide-carboxy- β m-methoxy-phenylethylamide was thus obtained in almost quantitative yield. It crystallises in colourless plates m.p. 105°. (Found: C=69.6; H=5.6; $C_{18}H_{17}O_4N$ requires C=69.4; H=5.5).

3-Methoxy-oxy-protoberberine (IV). The amide (III) (12 g.) was mixed with freshly distilled phosphorus oxychloride (120 c.c.), and the mixture heated for six hours on the water bath. A copious evolution of hydrogen chloride was observed, the liquid gradually undergoing a change in colour through yellow to dark red. The mixture was decomposed by means of cold water and the liquid filtered, leaving a dark resinous residue. The yellow filtrate was then basified when an orange red precipitate was obtained. This substance was collected, well washed with water, dried in the air, and boiled with Zinc dust (25 g.) and glacial acetic acid (135 c.c.) for five minutes. Then another 25 gms. of Zinc dust was added and the whole mixture further boiled for half an hour. The cooled solution was diluted with a large amount of ethyl-acetate, filtered and washed several times with dilute hydrochloric acid, then with aqueous sodium hydroxide and finally with water. The solution was dried over potassium carbonate and the solvent removed by distillation. A yellow crystalline residue was left behind, which was repeatedly crystallised from alcohol. The substance (2.5 g.) was then obtained as beautiful needles m.p. 143°. (Found: C=78.3; H=5.5. $C_{13}H_{15}O_2N$ requires C=78.0%; H=5.4%).

We wish to thank Dr. B. B. Dey of the Presidency College, Madras, for having kindly permitted the analyses required during this investigation to be carried out in his laboratory.

A new synthesis of 3 : 10 dimethoxy-tetrahydro-protoberberine

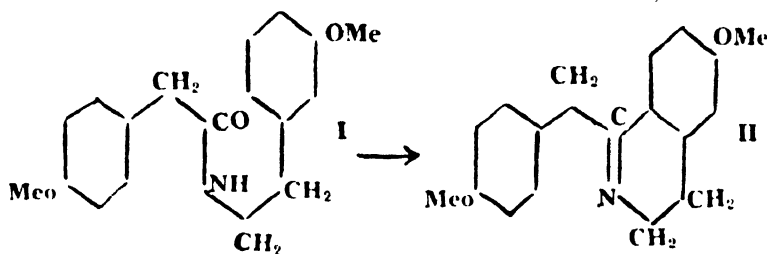
By

SATYENDRANATH CHAKRAVARTI, N. ANANTHAVIDYANATHAN AND

A. VENKATASUBBAN

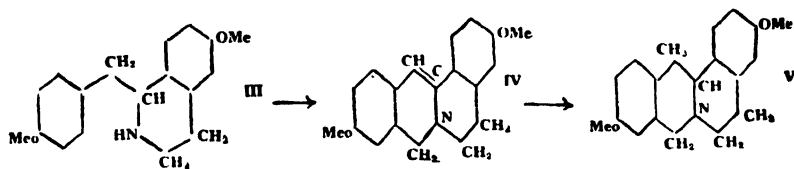
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3 : 10 dimethoxy-tetrahydro-protoberberine (V), which had previously been prepared by one of us (Chakravarti and Perkin, J. C. S. 1929, 196) has now been synthesised by a method similar to that used for the synthesis of 3 : 11 dimethoxy-tetrahydro-protoberberine (Chakravarti, Haworth and Perkin J. C. S. 1927, 2265). m-methoxy- β -phenylethylamine, prepared by a slight modification of the method previously described, (J. C. S. 2269) was condensed with p-methoxy-phenylacetic acid (prepared by a modification of the method of Mauthner, Annaler 1909, 370 374, Wakeman and Dakin, J. Biol. Chem., 1911, 9, 150; and Cain, Simonson, Smith J. C. S. 1913, 103, 1036) and p-methoxy-phenylaceto- β -m-Methoxy-phenylethylamide (1) m. p. 81°, was converted in a yield of more than 80% into 6 methoxy-1(4' methoxybenzyl) 3 : 4 dihydro-isoquinoline (II). The base readily forms a hydrochloride and a picrate and oxidises rapidly on exposure to air and



is readily reduced by zinc and sulphuric acid to 6-methoxy-1-(4'-methoxybenzyl)-1:2:3:4 tetrahydro-isoquinoline (III) a base yielding a crystalline sulphate and picrate. Attempts to convert (III) into 3:10 dimethoxy-tetrahydroberberine by means of formaldehyde were unsuccessful, invariably gummy products being obtained. It was ultimately found that treatment of the N-formyl derivative of (III) with phosphorus oxy-chloride gave 3:10 dimethoxy-dihydroprotoberberine (IV) in 20% yield. The substitution of phosphorus pentoxide for the oxychloride did not effect any improvement in the yield. The base (IV) was not isolated as such, except in a preliminary experiment, but

directly reduced by zinc dust and hydrochloric acid to 3 : 10 dimethoxytetrahydroprotoberberine (V), m.p. 139°. A mixed melting point with a specimen synthesised by the previous method (loc. cit. J. C. S. 1929, 201) caused no depression.



The interesting point which arises from this investigation is that whilst the first cyclisation that is to say the conversion of (I) into (II) takes place readily, the second cyclisation i.e., the conversion of (III) into (IV) takes place with much less readiness. This is undoubtedly due to the presence of a para activating methoxy group in (I), and the absence of such a group in (III).

Experimental. *p*-methoxy phenylaceto-*m*-methoxy-phenylethylamide (I). β -*m*-methoxy-phenylethylamine was prepared by a slight modification of our previous method (loc. cit.) the modification consisting in methylating *m*-hydroxy-benzaldehyde by shaking it with slight excess of dimethyl-sulphate in alkaline solution and then heating the product for one hour on the water-bath. Thus the use of methyl alcohol was obviated and a 90% yield of *m*-methoxy-benzaldehyde was obtained.

In preparing para-methoxy-phenyl-acetic acid the following modification was used :—

The azlactone obtained by the condensation of anisaldehyde and hippuric acid was hydrolysed by means of 10% sodium hydroxide solution, and the alkaline solution was then saturated with sulphur dioxide, the benzoic acid collected, and the filtrate acidified and boiled. *p*-methoxy-phenyl-pyruvic acid, which gradually separated, was collected and crystallised from glacial acetic acid. This acid m.p. 192° was oxidized in cold alkaline solution with hydrogen peroxide. On acidifying the solution, *p*-methoxy. phenylacetic acid, m.p. 86°, separated in beautiful plates and in an excellent yield.

Equivalent quantities of β -*m*-methoxy-phenylethylamine and *p*-methoxy-phenylacetic acid were heated at 180° for 2 hours. On crystallising the product from benzene through the aid of animal charcoal, *p*-methoxy-phenylaceto- β -*m*-methoxy-phenylethylamide (I) m.p.

81°, was obtained as colourless plates in a good yield. (Found C=72.0; H=7.2. $C_{18}H_{21}O_3N$ requires C=72.2; H=7.0%).

6-Methoxy-1 (4'-methoxybenzyl) 3:4 dihydro-isoquinoline (II). The amide just described (10g.) was heated with phosphorus oxychloride (25 c.c.) for 2 hours on the steam bath and then kept overnight. The mixture was decomposed with cold water and the clear solution thus obtained was made alkaline with sodium hydroxide in presence of benzene in a separating funnel, the precipitate formed being immediately shaken up with benzene. The alkaline solution was once more extracted with benzene and part of the combined benzene extract (A) was dried over potassium carbonate, and concentrated to a small bulk when a colourless oil was obtained.

A crystalline hydrochloride and a crystalline picrate m.p. 146° (Found C=56.3; H=4.6; $C_{24}H_{22}O_9N_4$ requires C=56.5; H=4.32) was prepared from the above base by usual methods.

6-Methoxy 1(4'-methoxy-benzyl) 1:2:3:4 tetrahydro-iso-quinoline (III). This was obtained by extracting the benzene extract (A) with dilute sulphuric acid, and reducing the acid solution with zinc dust. On cooling, the crystalline sulphate was deposited in the form of plates. The sulphate was dissolved in water and decomposed by means of ammonia, and the tetrahydrobase extracted with chloroform, dried over potassium carbonate and the solvent removed, leaving the base as an oil. The hydrochloride, obtained by dissolving the oil in hot dilute hydrochloric acid, and cooling, separated as a crystalline powder m.p. 196° (Found: C: 67.4; H=7.1; $C_{18}H_{22}O_2$, Nol requires C=67.6; H=6.9). The picrate prepared in alcoholic solution is sparingly soluble in cold alcohol and separates from this solvent as a crystalline powder m.p. 192° (decomp)

3:10 Dimethoxy-tetrahydro-protoberberine. (V). This base could not be obtained by treating the foregoing base with formaldehyde in the usual manner. This base was obtained in a 20% yield by the following method. The base (III) was heated with equivalent amount of anhydrous formic acid in an oil-bath at 200-210° until effervescence had ceased (3 hours.) The product was dissolved in toluene and boiled with phosphorus oxy-chloride for 1½ hours. After remaining overnight light petroleum was added and the clear liquid decanted from the dark coloured gum, the latter extracted with dilute hydrochloric acid (charcoal), and the solution of dihydroprotoberberine reduced by heating with excess of zinc dust for 2 hours, during which the yellow solution became colourless. The hot liquid was filtered, the filtrate decompos-

ed with ammonia, the base extracted with chloroform, dried over potassium carbonate, the chloroform removed, and the residue crystallised from methyl alcohol. On recrystallisation from methyl alcohol with the aid of animal charcoal, the substance was obtained in beautiful prisms, m.p. 139° (Found: C=77.1; H=7.3 $C_{19}H_{21}O_2N$ requires C: 77.3; H: 7.1%).

In a preliminary experiment, an attempt was made first to get 3:10 dimethoxy-dihydro-protoberberine (IV) in a crystalline state and then to reduce it to (V). It was found, however, that 3:10 dimethoxy-dihydroprotoberberine (IV), crystallised much less readily than 3:10 dimethoxy-tetra-hydro-protoberberine (V).

The Physiological Anatomy of *Ulex europaeus* (Linn.)

By

T. S. RAGHAVAN

(*Annamalai University.*)

Ulex europaeus (Linn.) is a hardy perennial shrub which grows on the higher ranges of the Nilgiri hills. On account of its extreme spinescence it is sometimes used as a hedge plant. All the organs of the shoot in this plant are modified into thorns. The leaves are spinescent; the primary branches borne in their axils are spinescent and the secondary branches springing from these are also in the form of thorns. This spinescence, according to Coulter¹ is induced by intense light and desiccation. All the parts, however, are green and it is, therefore, evident that in the absence of typical foliage leaves their work is carried on by these organs. Ootacamund, which is the highest hill of the Nilgiri range and in which this plant is of common occurrence, is more than eight thousand feet above the mean sea level. This corresponds very nearly to Schimper's⁵ Alpine region. In this region various climatic factors combine in one to make the vegetation markedly xerophytic. An investigation was undertaken into the anatomy of *Ulex* to find out how far the structure was or could be correlated to the external factors and whether it could anatomically be proved that it possessed xerophilous characters, i.e., anatomical features which tend to minimise transpiration. The material was collected in May 1931 and fixed in 4% Formaldehyde. On account of the hardness of the thorns only hand sections were taken and cleared in Lactic Acid.⁶

The Leaf

It is a small spinescent structure about 5 mm in length, slightly convex on its lower side and flat on the upper. Three veins traverse it parallel to one another of which the central one is the largest, while the other two, one on either side of it and running along the margin of the leaf are smaller. A transverse section of the leaf (Fig. 1) shows a thick coating of cuticle over the epidermis. The epidermal cells

according to Solereder⁷ have their inner membranes mucilaginous. The number of stomata on the upper surface is about 125 per square millimeter while on the lower it is 238. The number of epidermal cells for the same area is 475. The size of the cells, including the stomata are therefore comparatively small with a corresponding increase in the number of stomata. Each stoma (fig. 3) consists of two guard cells almost in a level with the rest of the epidermal cells; but the cuticle over the stoma forms a papillate protrusion (Fig. 3 p.p.). Below the epidermis are the palisade cells forming a compact tissue and arranged perpendicular to the surface of the leaf. The average length of the

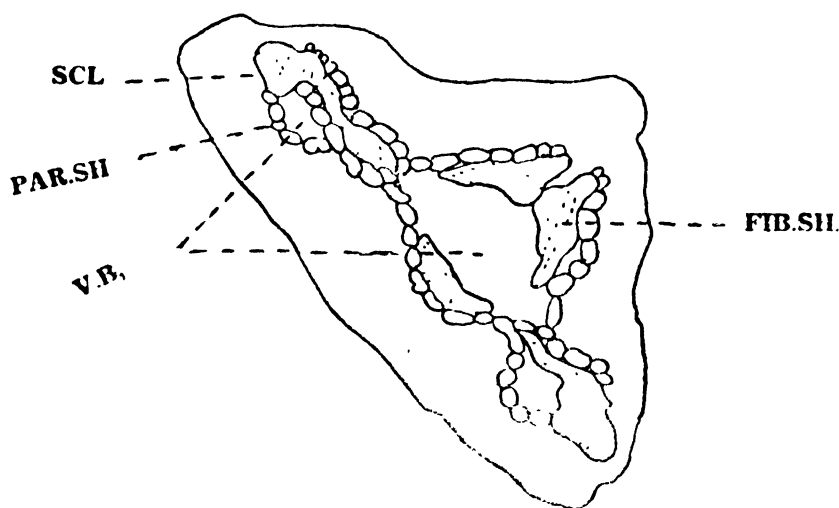


Fig. 1.

palisade cell is $18\ \mu$. and the breadth $5\ \mu$. The mean thickness of the leaf is $24\ \text{mm}$. of which the palisade parenchyma occupies $14\ \text{mm}$. or more than half the thickness of the leaf. It is noteworthy that the mesophyll is not differentiated into the spongy parenchyma and the number of intercellular spaces is very limited. In the centre of the leaf is a vascular strand flanked on either side by two smaller ones (Fig. 1 v.b.) which consist mainly of vessels. The central vascular bundle is protected by a V-shaped fibrous sheath towards the lower surface of the leaf. It does not however attain such a size on the upper surface and this is probably due to the fact that the xylem elements which are towards the upper surface being themselves thick walled do not need as much mechanical support as the thin walled phloem elements on the under surface. The combined effect of these two sheaths is that of an I girder which makes the leaf free from dangers of flexibility. The other two corners of the leaf are also pro-

vided with irregular bands of sclerenchyma cells (Fig. 1 Scl.) which take their origin in the hypodermal region and extend very nearly to the sides of the central vascular bundle. These two bands of sclerenchyma include in their angles two small mestome bundles one each (Fig. 1 v.b.). These sclerenchymatous bands running along the margin of the leaf are probably a means to make the leaf resist shearing stresses to which plants of the Alpine region are subjected to on account of the prevalent strong and drying winds. The combined effect of all these strips of mechanical elements is that of a compound girder. Between the palisade parenchyma and the conducting tissue, i.e., the vascular region, there is a sheath of ordinary parenchymatous cells which envelops the entire circle of veins and is in close contact with them (Fig. 1 Par. sh). This corresponds to Haberlandt's² second system of construction of photosynthetic cells. This system comprises two distinct tissues, one set apart for photosynthesis and the other for translocation, and a modification of this type is the association of the palisade tissue with a common parenchymatous sheath. From its position however it looks like the protective sheath or the endodermis. While it is likely that it may have taken on the function of an endodermis in a subsidiary manner, the structure of the cells, the presence of chloroplasts, etc., seem to indicate that this sheath is primarily a carbohydrate conducting tissue. But that it is also a protective layer, i.e., doing the function of the endodermis is shown by their walls being

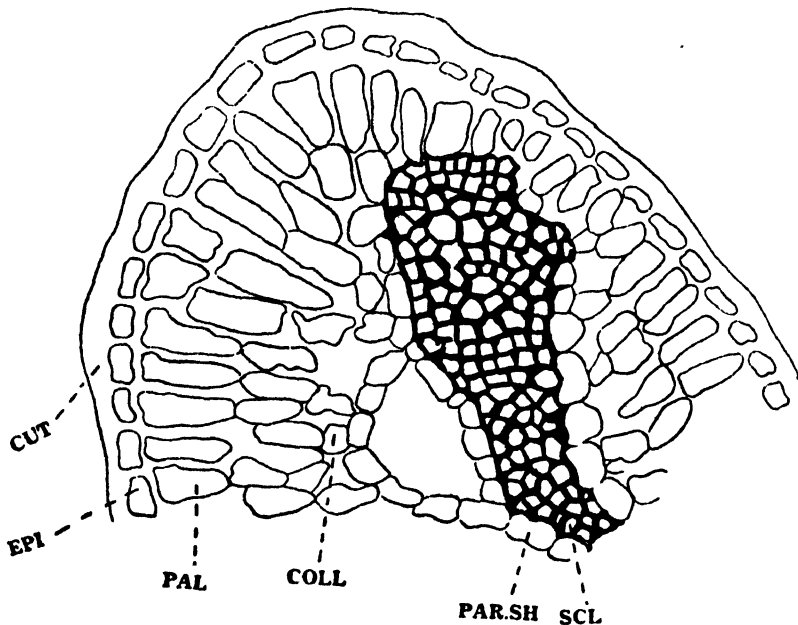


Fig. 2.

slightly thickened due to lignification. Such sheaths have been reported to occur in the leaves of certain grasses which do not possess a typical endodermis.² At the tips of a group of palisade cells are collecting cells (Fig. 2 Coll), which are in immediate contact with the parenchyma sheath and this supports the view that it is primarily a carbohydrate conducting tissue. It is likely that this may be the rudiments of the special "intermediary tissue"² which attains its highest development in the foliage leaf of a mesophytic dicotyledon where it takes the form of spongy parenchyma which receive the synthetic products from the collecting cells.

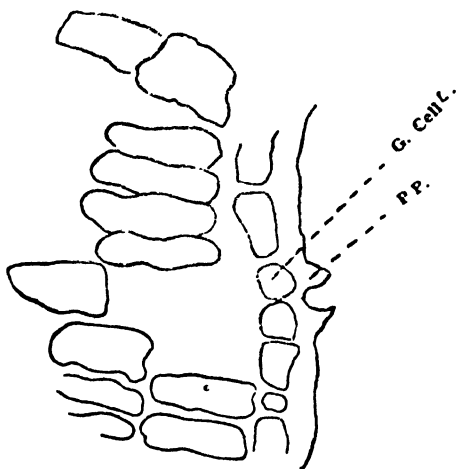


Fig. 3.

The Stem.

A very young branch of *Ulex* is more or less square in cross-section and below the four corners are the vascular bundles. Just above each of them is a linear column of sclerenchyma reaching up to the hypodermal region. Between the bundles rudiments of secondary ones are visible and above each such portion there is a knob like protuberance which, as the branch gets older, extends to the epidermis, and as more bundles are formed more of these sclerenchyma bands are developed. There is thus a dense net-work of vascular strands with a strong development of the mechanical tissue. The central medullary region is also occupied by thick walled cells (Fig. 5 Med). In a very young condition these have the structure of typical stone cells with very narrow lumen and walls stratified. Some of these sclerotic cells were found to contain starch grains in storage. The cortical cells (Fig. 5 Cor) are elongated and are of the same size as the palisade cells of the leaf and are full of chloroplasts. This tissue is also associated with a common parenchymatous sheath which surrounds the entire circle of vascular bundles. This is also the condition

obtaining in the leaf and the identity of both is explained by the fact that all the organs of the plant are concerned with the work of carbon assimilation. Such a sheath is known to occur in some plants with cylindric or prismatic stems where there is a fully developed photosynthetic system, like *Genista bracteolata*, and some species of *Asparagus*.²

As the branch gets older it becomes divided into ridges and furrows presumably to increase the surface exposed for photosynthesis (Fig. 4.). For out of a total mean thickness of the branch of 1.6 mm., the pith alone occupies about 1 mm. in diameter and with the sclerenchymatous bands above each vascular bundle, the surface of the photosynthetic system will be rendered very small if the entire branch or

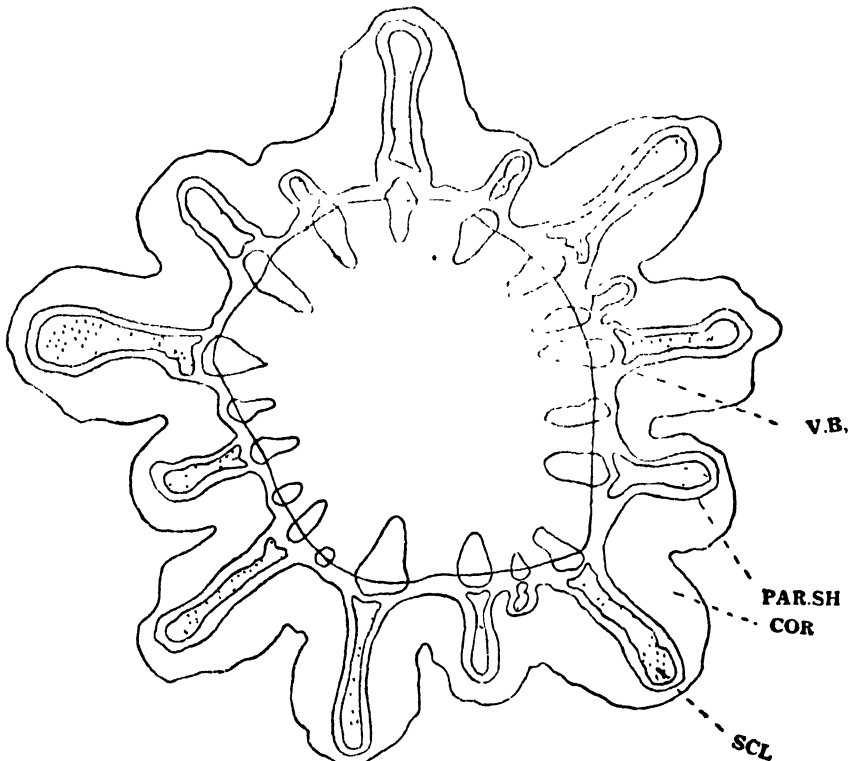


Fig. 4.

stem were circular or square in outline. With an increase in the proportion of the size of the pith and mechanical tissue region to the total extent, the ridges become greater in number and in depth, and this is what is found in older branches.

The arrangement of the mechanical strands suggests the idea that they are in the nature of hard bast and form a system of compound girders, and the great length of these is obviously to give additional strength to the ridges. The parenchyma sheath occurs here also and as in the case of the leaf is in contact with the photosynthetic cells. There is therefore little doubt in regard to the nature of the sheath which must be considered as primarily a carbohydrate conducting tissue.

Discussion.

Ulex europaeus is a plant of the Alpine region presenting a xerophytic appearance. It is generally assumed that such plants possess anatomical characters which tend to reduce transpiration to a minimum, i.e., sunken stomata, reduction of transpiring surface, reduction in the number of stomata, per unit area, thick coating of cuticle. According to Maximov³ plants subjected to drying winds have a highly developed root system, ample water conducting tissue and small or deeply dissected leaves. *Ulex* possesses all these characters as it grows in a region where there are not only strong and drying winds

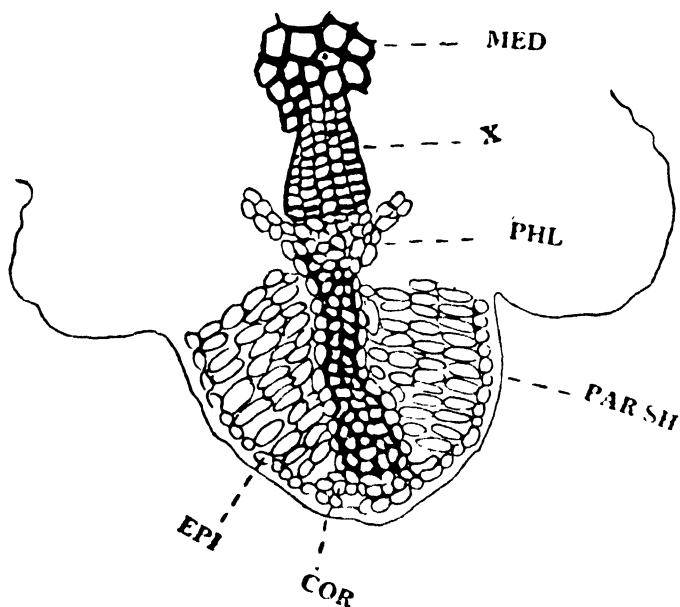


Fig. 5.

but also intense solar radiation. This intense solar radiation also induces the cells of the chlorenchyma to grow perpendicularly to the leaf surface "thereby converting potential spongy mesophyll into pali-

sade tissue." This results in an increase of assimilative capacity by an increase in the assimilative surface. In the plant under investigation the chlorenchyma is composed of a compact palisade tissue with a well developed conducting tissue. An increase in the surface exposed for assimilative work is brought about by the branches and stems dividing into ridges and furrows. But this will also bring about an increase in the area exposed for transpiration, and this is opposed to the traditional belief that xerophytes possess adaptations to reduce transpiration. Salisbury⁴ has shown that high stomatal frequencies are associated with xerophytic structures and this is also confirmed by Maximov³ according to whom intense solar radiation brings about a decrease in the size of the cells with a corresponding increase in the number of them including the stomata. In *Ulex*, as it has been pointed out, stomata occur both on the upper and the lower side of the leaves, 125 per sq. mm. in the former and 237 in the latter. This number is much more than in the case of an ordinary mesophyte like *Thespesia populnea* where there are not only no stomata on the upper surface but the stomatal frequency in the lower is much less, i.e., 208. It is therefore natural that an increase of assimilative capacity which is correlated with an increased number of stomata per unit area results in a more rapid rate of transpiration. This necessitates an abundant water supply and a well developed conducting system together with a short and easy path along which water can travel from the veins to the evaporating cells of the leaf. Such a condition is clearly seen to occur in *Ulex* where the mesophyll cells are more or less directly connected with the large parenchymatous cells sheathing the veins. These seem to aid in the distribution of water to the mesophyll; and the deeply dissected nature of the plant, i.e., the replacement of ordinary foliage leaves by thorns is obviously not only a means to withstand the strong winds but also to reduce the distance between the water conducting veins and the evaporating cells of the mesophyll. It is not therefore to reduce the area of transpiring surface as it is traditionally thought to be. The thick coating of cuticle however is protective in that during wilting when the stomata are closed it prevents excessive loss of water through the cells of the epidermis. From all these considerations it is more or less quite evident that though *Ulex europaeus* is xerophytic it is not actually xerophilous, i.e., possessing anatomical characters tending to a minimal transpiration, but it is only drought resistant.

In conclusion, I have great pleasure in acknowledging with gratitude much valuable help and advice which I received at the hands of Professor Rai Bahadur Shiv Ram Kashyap during the preparation of this paper.

Explanation of Figures.***Ulex europaeus.***

All figures were drawn with the Abbe drawing apparatus and the initial magnification of each is given below.

Figure I. Transverse section of leaf to show the general arrangement of the mechanical tissues, the vascular strands and the parenchyma sheath.

Fib. Sh.—Fibrous sheath; Scl.—Sclerenchyma.

Par. Sh.—Parenchyma Sheath; V. b. Vascular bundle (x 80).

Figure II. A portion of the leaf enlarged, to show cuticle over epidermis, structure of palisade cells and collecting cells, and the parenchyma sheath in close contact with these and the Sclerenchyma band in the edge of the leaf.

Cut.—Cuticle; Epi.—Epidermis; Coll.—Collecting Cells.

Scl.—Sclerenchyma; Pal.—Palisade cells. (x 440).

Figure III. A Stoma in cross-section.

G. Cell.—Guard cells; p. p. papillate projection above the guard cells. (x 440).

Figure IV. T. S. of an adult branch, to show ridges and furrows vascular bundles and hard bast bands above each and the parenchyma sheath.

Cor.—Cortex; V. b.—Vascular bundle; Par. sh.—Parenchyma sheath; Scl. Sclerenchyma (x 70).

Figure V. One of the ridges enlarged and filled with respective tissue cells, to show the palisade like cortical cells, the sclerenchyma band above the vascular bundle, the parenchyma sheath around it and in close contact with the cortical cells, and the sclerotic medullary cells. (x 100).

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The Development of Tamilian Religious Thought

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I

Introductory.

The beginnings of Tamilian civilization may be traced far back to the ancient days when the waters of the *Pahruli* river brought fertility to the regions that extended southwards beyond *Kumari* (the present Cape Comorin.) The Pandya king *Mā Kīrti* at whose court the *Tholkāppiyam* was published flourished before the time of the great deluge¹ which submerged several ranges of hills, the river Pahruli and the fortynine countries adjoining it. The waters of the Indian Ocean roll over the spot where the proud city of *Kavadapuram*² stood. This city of great wealth, 'rich in gold, celestial and adorned with pearls and gems', was the second capital city of the Pandyan kingdom; the original seat of government, *Thenmadura*, was situated further south and was swallowed up by the sea at the end of the first *Oozhi*. The commentator *Nacchinārkinīyār* ascribes to king *Mā Kīrti*³ a long reign of twenty-four thousand years and proceeds to say that the scholars at this old king's court were, therefore, men of matchless wisdom. If years mean anything, *Mā Kīrti* and his courtiers should certainly be the possessors of very ripe wisdom. Never-the-less we, who belong to a short-lived race of mortals, whose average span of life does not exceed the proverbial three score years and ten, refuse to see eye to eye with *Nacchinārkinīyār* when he makes this pre-diluvian monarch go through the dull routine of a king's life for such a long number of years. Although the tradition may be unacceptable for purposes of historical investigation it may not be uninteresting to seek for and discover its origin. The existence of parallel traditions in Sumerian history suggests the possibility of a common source. The king lists⁴ of Larsa give the names of

1. *Chilappadikaram* XI, 17-22; *Kali-thokai* CIV 1-4; *Tholkappiyam*: *Payiram* Comm.; *Karpiyal* 4 Comm., and *Marapiyal* 94 Comm.; *Purananuru* VI, 2 and IX, 11.

2. *Valmiki Ramayanam*, *Kishkindakandam*, XLI, 19.

3. *Tholkappiyam*: *Payiram* Comm.

eight kings before the deluge who reigned for periods ranging between 18,600 and 43,200 years. The civilisation of the Mesopotamian valley has a special interest to students of Tamil culture, for the ancient Sumerians are said to bear most resemblance to the Dravidian ethnic type of India.⁵ The discovery of monuments⁶ belonging to the First Dynasty of Ur (3100-2930 B.C.), the third after the Flood has proved to a certain extent that the records left by the scribes of ancient Sumer are not altogether legendary. The archaeological finds at Harappa and Mohenji-Daro may throw fuller light on the racial and cultural connexions of the Sumerians and the ancient Dravidians, and the antiquity of the Sumero-Dravidian civilization. The account given by Berosus⁷ in the third or fourth century before Christ appears to suggest that the early settlers of Sumer arrived by sea, bringing with them a fully developed civilization. This civilization may possibly have arisen in the submerged Tamil-lands that extended to the south of Kumari.

Coming back to the court of king Mā Kīrti, we see *Tholkappiyar* seated in the midst of an assembly of learned pandits, expounding his immortal treatise. Opposite to him sits *Athankōttāsan*, a relentless critic, who at the instigation of the sage *Agattiyar* (*Sanskrit*—*Agastya*) points out many flaws in the book. *Tholkappiyar* successfully meets the points raised by *Athankōttāsan* and the book receives the approbation of the wise men of Mā Kīrti's court. From thenceforward the *Tholkappiyam* becomes the most authoritative treatise on Tamil language and Tamil culture. From internal evidence one is led to believe that the book was written at a time when the Aryan culture was just beginning to influence the social and religious life of the ancient Tamilians. *Nacchinārkinīyār* says that the *Tholkappiyam* existed before the time of Vyasa⁸ the compiler of the Vedas and the author of the *Mahabharata*. The high standard of excellence reached by the book shows that the Tamils at this time were a highly civilized people. The sage *Agattiyar* came into a land which was civilized and wealthy. There are a good many legends centering round the name of this sage. He is said to have started from the Meru; passing through *Dwarapathi* (*Dwarasamudram*), he proceeded southwards with a band of followers until he reached *Tamilakam*. After his arrival, the *Pothiya*⁹ hill, where he fixes up his abode becomes as famous as the Himalayas,

4, 5, 6, 7. C. L. Woolley: *The Sumerians* (Oxford) pages 21, 30, 187 and 189; H. R. Hall: *The Ancient History of the Near East* (Methuen) pages 173, 174 and 177.

8. *Tholkappiyam*: *Payiram Comm.*

9. *Chilappadikaram* I, 14; III, 1; VIII, 3; XV, 14; XXVII, 67.

the *Kaviri*¹⁰ river (Cauvery) which is said to have originated from his water-pot becomes the sacred Ganges of the South; *Kanta-man*¹¹ the Chola king who sought his protection is saved from the murderous battleaxe of Parasurama, the protagonist of priestly power; the mighty Ravana¹² crosses the sage's path and becomes subdued (*literally* bound) not by force of arms, but by the subtler persuasive power of music. The sage is said to have spent years in the island of Ceylon practising severe austerities. Later he becomes deified and we see temples erected to him in far-off Java. This half-mythical figure stands in the hoary past as the synthesis of two great cultures, the Aryan and the Dravidian which like the confluence of the Ganges and the Jumna was to progress ever afterwards as an undivided single life-giving current.

The earliest existing literary records of Tamilakam are to be found among the anthologies known as the Sangam classics. Rescued from palm-leaf manuscripts and brought to light during the last three or four decades these anthologies open up an entirely new world, entering into which one meets with a god-like race of men and women, strong in physique, possessed of a keen intellect, proud, valiant, active and energetic. They appear to have given little or no thought to metaphysical speculations. Life in those remote times was strenuous and the hero who won renown by steady perseverance and indomitable courage either in the battle-field or in the more peaceful avocations of life was held up as the ideal to be followed. He whose valour was sung by bards here on earth was sure of mounting the celestial car which carried the soul in its ascent to the abode of the Immortals.¹³ This earliest epoch in the civilization of the Tamils is the age in which Heroism was exalted to the position of a religion. The acquisition of fame was held up as the motive for virtuous action and the performance of strenuous deeds of valour.

The War-God *Muruga*, ruddy-complexioned, resembling the sun at dawn, was worshipped from the earliest times as the ideal of un-failing Achievement.¹⁴ His mother the great Goddess, whom the TAMILIAN soldiers invoked in the field of battle was known as *Korravai*,¹⁵ the Victorious One. Even in those early days there were philosophers, *Arivar*, who by years of mental discipline had attained the intuitive

10. Manimekhalai, Padikam 12.

11. Manimekhalai XXII, 35.

12. Tholkappiyam: Payiram Comm.

13. Purananuru, XXVII, 7-9.

14. Purananuru, LVI, 14.

15. See Tholkappiyam Purattinai Iyal and Purapporul-venba-malai.

insight into the past, the present and the future; and there were also anchorites, *Thapathar* who performed severe austerities; the Arivar and the Thapathar having the attainment of Truth as the sole aim of life worshipped Shiva, the unborn, the embodiment of Truth.¹⁶ To those who shrank from the path of Truth, the God of Truth appeared as the God of Wrath and Destruction. *Māyon*, the blue-complexioned was the embodiment of Fame.¹⁷ His brother, *Vāliyōn*, whose complexion was as white as a conch-shell was the personification of undisputed Strength.¹⁸ Indra and Varuna ranked only as demi-gods. It is said that the Chola King *Thodi-thōl-chempian*¹⁹ went as an ally of the king of the celestials and broke down the three hanging fortresses of the Asuras. In sealing a bond of friendship, the king of the celestials agreed to visit the Chola capital once a year and participate in the great festival which was held in his honour for eight and twenty days. This was the origin of the *Indravila*. Mention is made of a Pandya king *Vadimp-alambaninra-pandyan* who instituted a festival in honour of the Sea-god.²⁰ One of his descendants not only discarded this festival but also hurled a lance of defiance at the Sea-god, whereupon the enraged sea²¹ swept away the Pahruli river, several ranges of hills and a goodly portion of the Pandya dominions. The undaunted Pandya marched northwards and conquered new lands to make up for the loss he had sustained. Old king *Mā Kīrti*²² defied the very gods and looked upon them as mere quarrelsome children. Once when he heard that hostilities were about to break out between the Devas and the Asuras he interposed and asked them to lay down their arms and added the threat that if either party were to resort to acts of violence, his strong right arm would smite down the miscreants. The threat went home and both parties slunk away in terror from the presence of the mighty monarch. These legends help us to gain some insight into the ideals and aspirations that stirred the heart of the old Tamil warrior.

Paripādal, one of the Sangam anthologies, makes mention of the Vedic pantheon²³ of gods, such as the twelve Adityas, the eight Vasus, the eleven Rudras and the twin Asvini-devas; but the worship of these deities had not yet taken root among the mass of the people. Some of

16. *Paripadal*, V, 33.

17. *Puram* LVI, 13.

18. *Puram* LVI, 12.

19. *Manimekhalai* I, 4-10.

20. *Puram* IX, 10.

21. *Chilappadikaram* XI, 17-22.

22. *Iraiyānar Akapporul Sutra* 35 Comm.

23. *Paripadal* III, 6-8; VIII, 4-8.

the kings were persuaded to perform Vedic sacrifices which they did more for the purpose of winning earthly renown than for the achieving of heavenly rewards. One of the Pandya kings *Muthu-kudumi Peru-Vazhuthi* who lived before the time of the submergence of the Pahruli river had the distinguishing epithet of *Pal-yaga-salai*, which means the possessor of many sacrificial halls and another Chola king is known as *Peru-nar-killi* who performed the *Rajasuya* sacrifice. Early Aryan thought appears to have been introduced into Tamilakam with Vedic ritualism.

The *Tholkappiyam* and the *Paripādal* make incidental mention of the early speculations concerning the Universe, man's place in it and the ultimate destiny of humanity. The Sankhya system of philosophy was in vogue from very early times; attention, however, does not appear to have been centred round the study of philosophy until the coming of the Jains and the Buddhists. Within a century or two after the time of their illustrious founders these great religions appear to have been introduced into Tamilakam. Somewhere about this time, there appeared on the firmament of Tamilakam a star of the first magnitude which continues to shed its lustre even to this day. *Tiruvalluvar*, whose name is known to all parts of the civilized world, and whose teachings have lent a unique grandeur to the language in which they were uttered lived in an age of great intellectual activity. The ferment introduced by the great heresies of Jainism and Buddhism made the exponents of Vaidika Dharma to revalue the traditional teachings and to formulate a course of conduct which while remaining within the established tenets of the ancient Dharma would also appeal to those who would not accept the authority of the Vedas. The Universal gospel of *Tiruvalluvar* met this demand and has ever since been acclaimed as the *Uttara Veda*.

When Buddhism and Jainism were first introduced they were considered merely as systems of thought and were received with open arms. The disciplined life of the monk and the self-sacrifice shown by him may have appealed to the hardy Tamil warrior. The old soldier who might have grown world-weary of the endless number of battles he was called upon to fight may have found a calm refuge in the seclusion of monasteries. Those who suffered great bereavements such as the fathers of *Kovalan* and *Kannaki* entered the monasteries to pass the last days of their lives. Princes of the royal blood such as *Ilanko-adikal* embraced a life of poverty to follow the example of the noble ascetic, the scion of the Sakya clan. Along with Buddhism and Jainism the Nyaya and Vaisesika philosophies were introduced into Tamilakam. In those remote times the Mimamsa system does not ap-

pear to have been divided into the Purva and the Uttara Mimamsas. Lokayata (materialism), Buddhism, the Sankhya, the Nyaya, the Vaiseshika and the Mimamsa systems are known as the six systems of philosophy in the time of the *Manimekhalai*.²⁴ A great impetus was given to the cultivation of learning and some of the Tamilian Buddhist scholars went to China, Tibet and the island of Java carrying with them the torch of knowledge. Mention is made in the *Manimekhalai* of a famous Buddhist teacher, *Ara-vana-adikal*. The name may be translated into Sanskrit as Dharma-swarupa. He is the hero of the epic as much as his disciple the Bhikshuni Manimekhalai is the heroine. The fact that he was extremely aged is mentioned in several places in the poem. The force of his personality appears to have gained many adherents to the path of Buddhism. Later on Buddhism and Jainism gained ground to such an extent that they gave up the spirit of toleration which characterized them at the beginning and became aggressive religions. They aimed at the conversion of the whole of Tamilakam and attempted to do this by winning over the exclusive patronage of princes and scholars. After the destruction of *Pukar* (*Kavirippūmpattinam*), which event took place somewhere about the end of the second century, the Chola capital is transferred to Uraiyur. Madura suffers from a severe drought and famine for twelve years. The poets of the Sangam disperse and the glories of the good old days become a mere memory of the past. Several Northern dynasties that cast covetous eyes upon the wealth of Tamilakam find an opportune moment to gain a foothold in the South; an Aryan expeditionary force from the North appears to have invaded Tamilakam as early as the time of the Pandya king mentioned in the *Chilappadikaram*. This invasion was successfully resisted and the king is, therefore, known to history as *Arya-padai-kadantha Neduncheliyan*. Subsequently the Aryan hordes make a clean sweep of the country and in the next century we see Pallava kings well-established in Kanchi. The Chola and the Pandya dynasties suffer a temporary eclipse and the whole country passes through a period of transition, at the end of which, we find that the North had achieved a cultural conquest even more pronounced than the political conquest. The very names of the Pandya and Chola kings become Sanskritized.

It was during this time, perhaps by the end of the third century or a little earlier, that the Yoga system of philosophy began to appear in Tamilakam. Tradition says that Patanjali lived at Chidambaram and wrote his commentary on Panini's grammar, a treatise on medicine, his

immortal treatise on Yoga and the Tantric rules for the worship of Nataraja. The sage is represented as a Nāga and is considered as an incarnation of Sesha Nāga. This seems to suggest that the theory and practice of Yoga were developed among the ancient Nāgas. Patanjali's name is coupled with that of Vyagrapāda another sage who is said to have arrived at Chidambaram earlier. This sage is represented with eyes in his toes. Is he to be identified with Akshapāda, the father of Nyaya Sastra? These two sages are said to be the first to witness the cosmic dance of Nataraja. The account may be symbolic of the fact that the supreme truth of the Shaiva religion can only be discerned by the combined eyes of Yoga and Nyaya. By saying so, we do not in the least deny the historicity of the two sages mentioned above. The Agamic cult of worship which probably existed as a secret cult from early times was elaborated during this period. It was certainly enriched by the influx of Tantric thought from the North. The worship of Ganesha, the elephant-headed God, whose form is that of the Pranava mantra is recognised in the Yoga system.

Yoga and Tantra engaged the attention of Siddhars and recluses. Before they could filter down to the mass of the people it was necessary that the doctrines taught by them should be actualized in the lives of one or more saintly personages. *Karaikkal Ammaiyar* or *Karaikal Pei* (the demoness of Karaikkal) as she called herself, was blessed with a vision of the mystic dance at Tiruvalangādu, and having the gift of song she has sung in immortal verse the glory of the vision that was vouchsafed unto her, the first Alwars of Vaishnavism were probably contemporaries of Karaikal Ammaiyar. Cholan *Chenganān*, the builder of many temples also probably lived about this time. In the middle of the seventh century came *Tirugnana Sambandhar*, the child-saint of Shiyali who in his third year was blessed with the Divine vision and from thence-forward looked upon Shiva and Parvati as his parents. The saintly old *Appar*, who in his young days entered a Jain monastery and later on embraced Shaivism is a contemporary of Sambandhar. Many sects²⁵ of Shaivism which are at present known only by name were in active existence at the time of Appar. *Kapalis* who made use of human skulls as begging bowls, *Mavratīs* with long matted hair and garlands of bones, *Pāsūpathars* and others were seen in the streets of Kanchi and Tiruvarur. There was a whole galaxy of saints at this epoch. *Andāl*, the mystic poetess, the beloved bride of Sri Ranganatha, and her saintly father, *Periyalwar*, lived about this time. *Sundaramurti-Nayanar* the last of the Devara hymnists came about

25. Appar, Devaram—Tiruvarur, Tiruvatirai-Tirupadikam.

two centuries later. *Tirumangaimannan*, the Vaishnava saint is probably a contemporary of Sundarar. Sambandhar, Appar and Sundarar have left behind beautiful songs in praise of Shiva which to this day form the holy book of the Shaivites. Alwars have left behind the *Tiruvaimoli*, the Tamil Veda of the Vaishnavites. *Manickavasagar*, the prince of mystics, completed the work of Shaiva revival started by the Devara hymnists.²⁶ Buddhism disappeared from South India; but the unseen gentle influence of the Buddha, the ideal of compassion to all living creatures and the ethical principles expounded by Him persisted and became permanently incorporated in the religious life of Tamilakam. Jainism, although it received a set-back, continued to exist in the monasteries which besides being centres of religious life were also functioning as a sort of grammar schools. The elementary treatises on Grammar, Prosody and Poetics and the metrical lexicons (*Nighantus*) placed in the hands of young students of Tamil even to this day, have come from mediaeval Jain monasteries.

The *Alwars* and the *Nayanmars* breathed new life into the people and roused them from their lethargy. The pessimistic attitude of mind fostered in the Jain and Buddhist monasteries gave place to a living faith. The glorious example of the Shaivite and Vaishnavite saints helped the votaries of these religions to lead a life of service and selfless devotion. Princes lavished their wealth in building temples and in patronising poets. The old dynasties of Tamilakam felt their own strength and refused to pay tribute to alien monarchs.²⁷ By successful encounters they not only freed themselves from the foreign yoke but also subdued their erstwhile rulers. Perhaps, it was during this time that the religion and culture of South India spread to far-off Champa and Cambodia. As a result of the awakening of the spirit, subsequent centuries witness an unprecedented literary revival. *Jayamkondan's Kalingattuparani* and Kamban's immortal epic reach such heights as were never before reached. Kamba-Ramayanam truly reflects the religious thought of the age in which it was written. The old cult of heroism which regarded valour as the supreme virtue and immortal fame here on earth as the equivalent of immortality hereafter, forms the basis of the lives so beautifully depicted by Kamban. The great God, who forgot His divinity on hearing the wails of a suffering world walks in the midst of kings, outcastes and recluses as a man among men sharing their joys and sorrows. In Him the Kshatriya ideal of life

26. The date of Manickavasakar is yet an open question; there are strong reasons in support of the claim put forward by some scholars fixing his date to the end of the third century.

27. Sundarar Devaram: Koil-padikam.

finds its fullest manifestation. Kamban has pictured this ideal to its utmost perfection. We find contemporary kings and princes of the royal blood vying with one another in honouring this great poet, who stands unparalleled as the poet of manliness and Kshatriya prowess. The Devara hymns, the works of Manicka-vasagar and St. Tirumular and of various other Shaiva poets were collected and arranged into the eleven Tirumurais or holy books of Shaivaism and *Sekkilar* wrote his story of the Shaiva saints which formed the twelfth Tirumurai. Ramānuja, the great exponent of Visishtadwaita lived about this time. The sacred utterances of the Alvars were collected and arranged and formed the authoritative scriptures of the Vaishnavas.

We pass on and come to an age in which men's minds turn once more to philosophical speculations. *Meikandān* appears on the scene. The same Divine power which made the child of Shiyali (St. Tirugnana-Sambandhar) utter words of wisdom couched in the language of poesy, speaks once more through the tongue of the child of *Tiruvennainallur*. The inspired message is now given in the language of philosophy, the language of dialectics and abstract thought. The message is, however, the same. It is not mere scholastic philosophy that Meikandān expounded. The first half of *Siva-gnana-bodham* discusses the nature of bondage and freedom and the second half points out the path to the attainment of freedom. Herein we find a synthesis of pure reason and Yogic mysticism which transcends the bounds of reason. *Sakala-agama-panditha*, the Brahman philosopher, surrenders at the feet of this Vellalah boy and becomes his first disciple taking the name of *Arul-nandi-Sivacharya*. He composes the *Siva-gnana-siddhiyar* and *Irupa-irupathu* and hands over the torch of knowledge to *Marai-gnana-Sambandhar* who hands it over to *Umapathi-Sivacharya*. Umapathi is the author of no less than eight works on Saiva Siddhanta of which one, the *Sankalpa-Nirakarana*, probably the last, was written in the Saka year 1235 (that is 620 years ago).

About the same time, Malik Kafur occupied the city of Madura and the subsequent centuries witness the decline and fall of the Pandyas and the Cholas. Foreign invasions, civil wars and internecine intrigues well-nigh exhaust the energy of the hardy Tamil race. With the fall of Vijayanagar, Hindu independence becomes a memory of the past and a sort of mental stupor sets down upon the people; they begin to dream of past glories. The world in which they lived and moved and had their being, had no attraction for them; they directed their thoughts to regions situated far beyond the mortal ken. Despair seizes the heart of the people, they feel tired of life and shrink in horror from the tortures that might await them on the other side of

the grave. The old Tamil warrior, who laughed at death, never thought of inventing a hell; the Buddhists introduced a few, but the priests who came into prominence in this age of degradation ushered into existence twenty-eight crores of hells. The heroic legends of the Sangam age were almost forgotten; the Jataka Tales imported by the Buddhists were metamorphosed into new shapes; stories centering round the sage Agastya, episodes from the great epics and tales fabricated by priestly story-tellers to illustrate the inexorable working of Karma supplied the material for unusually long poetical compositions called *Sthala-puranams*. The vast majority of these compositions are but the echoes of the only consolation which priest-craft has to offer to a fallen and degraded people. They exhort the readers not to mind their present trials and tribulations but to make regular offerings to the deities, bathe in the sacred waters, observe fasts and prepare themselves to gain safe entrance to the portals of heaven, ordering out their present life in strict conformity to the dictates of their rightful spiritual guardians, the priests. Monasteries sprung up all over the country. Founded upon Buddhist and Jain models, these institutions fostered to a certain extent religious and secular learning. But their main function was the offering of elaborate worship to the deities and the departed saints who founded the Order. The presiding abbot was paid divine honours even during his life-time. Slowly and steadily these houses of religion began to accumulate large funds. Flatterers appeared in the guise of poets and received sumptuous meals and costly presents from the presiding abbots. The abbot, secure in his exalted eminence, often led a life of irresponsible ease and knew little or nothing of the miseries of the poor and the downtrodden. The poor people were daily growing poorer, and genuine scholarship was languishing for want of patronage, while a motley crowd of idle parasites consisting of priests, flatterers and the like, were fattening themselves on the food produced by the labour of the poor untouchables. The courts of the chieftains who ruled over Tamilakam in these troubled times were also infested with the same kind of parasitic vermin. *Sthala-purānas* were made to order and wherever incidents or ideas were wanting they were freely drawn from the inexhaustible source of Sanskrit literature.

The monasteries were not all of one persuasion. All the various sects of Hinduism had their own *Maths*. In spite of the laxity that was spreading over these institutions they served the very useful purpose of preserving the old manuscripts and keeping inextinguished the lamp of learning that was handed down to them through the centuries. *Tiruvavaduthurai Athinam* which claims an unbroken line of succession from *Meikandān* has preserved the Saiva Siddhanta philo-

sophy and has also produced a school of grammarians well-versed both in Sanskrit and Tamil. The chronicles of this *Math* state that during the reign of Virupaksha Raja²⁸ (probably Virupaksha I of Vijayanagar), one *Sivaprakāsa Desikar* of the Thiruvavaduthurai Math preached the doctrines of Virashaivism in the presence of *Linganna*, one of the ministers of the king. The preaching was so good that the minister requested the monk to be the head of the Virashaiva Math at Tiruvannamalai. With the permission of his monastic superior, *Sivaprakāsar* took charge of the Tiruvannamalai Athinam. This *Sivaprakāsar* should not be confused with Thuraimangalam Sivaprakāsa Swamigal, the author of many standard works on Virashaiva philosophy. From the Dharmapura Athinam came *Kumara-guru-para Swamigal*, the gifted poet and founder of the Tiru-panandal Athinam. *Sivagra Yogigal* of Suriyanarkoil Athinam, is another great exponent of Saiva Siddhanta philosophy. By the beginning of the fourteenth century Vedanta philosophy which had its votaries from very early times had extended its influence to such an extent as to be considered a serious rival to Saiva Siddhanta. This is evident from the fact that Arul-nandi-Sivacharya as well as Umapathi-Sivacharya attempt to refute at length the doctrine of Vedantic idealism. There were Vedanta Maths in various parts of the country where instruction was imparted through the medium of Tamil. *Veerai Alawandar*, *Sri Pattar*, *Tatwa Rayar* and *Kannudaiya Vallalar* are among those who have enriched Tamil literature with Vedantic thought. The Vaishnava Maths were instrumental in bringing out commentaries on the *Divya Prabandhams*.

Towards the end of the seventeenth century, Father Beschi was preaching the doctrines of Roman Catholic Christianity and was creating a Christian Tamil literature. *Omar*, the Tamil poet and others of the Muhammadan faith were enriching Tamil with Islamic thought; *Pillai-perumal-aiyengar* was adding to Vaishnava Tamil literature. *Thayumānavar*, the mystic saint, sets at ease the warring schools of Vedanta and Siddhanta by pointing out the harmony that underlies the two schools of thought. About a century later, comes *Ramalinga Swamigal* whose devotional hymns are such as would melt the stoniest of hearts. *Arumuga Navalar* appears in Jaffna and with a reformer's zeal stems the tide of Christian proselytization and extensively makes use of the printing press to popularise the teachings of Shaivism. The general awakening in Bharat-varsha rouses the South from its slumber and the message of harmony propounded by Swami Vivekananda, Hinduism's representative to the world's parliament of religions,

broadens the outlook of the Hindus and makes them feel that their religion is wide enough to receive light from all quarters and strong enough to withstand all opposition.

We come to modern times. The venerable figure of *Mahamahopadhyaya Dr. Swaminatha Iyer* dominates the realm of Tamil literature for fully half a century. Ceaselessly labouring with untiring patience and industry, he carefully edits and brings out book after book of the ancient Tamil classics, thereby silently ushering in a renaissance in Tamil land. It may perhaps take another half century for Tamilakam to realise the extent of the services rendered to it by the venerable pandit. Only a small fraction of the material that lay hidden in these ancient books has so far been brought to light. But that little was sufficient to infuse new life into the Tamilians. The gloom that overshadowed the country during the past four centuries is slowly passing away and a new dawn is in sight. The harbinger of the approaching dawn is our latest poet *Subrahmanya Bharathi*. He is essentially a religious poet. With religious mysticism he combines an unbounded love for the poor and the downtrodden. The poems that he addresses to Kannan (Sri Krishna) are as sweet and soul-stirring as any that we meet with in ancient literature; the hymns to Shakti are grander than the old hymns addressed to Korravai. The charm of his lyrics, and the dignified tone of his patriotic songs have endeared him to his people. The healthy outlook on life underlying his poems has a universal appeal. He views humanity as a whole and stands ready to embrace the North and the South, the East and the West, the Brahman and the outcaste as well as the educated and the illiterate. May the Tamil people, the inheritors of a glorious civilisation, view the world with the eyes of Bharathi, their latest poet and rising above narrow sectarianism and petty social conventions march on the path that will lead them to the Divine Spirit, which is the source of all goodness, beauty and truth.

Pahruli பஹ்லுனி; *Kumari* குமரி; *Mā Kirti* மாகீர்த்தி; *Tholkappiyam* தொல்காப்பியம்; *Kavadapuram* கபாடபுரம்; *Thenmadurai* தென்மதுரை; *Oozhi* ஊழி; *Nacchinarkiniyar* நச்சினர்க்கினியர்; *Tholkappiyar* தொல்காப்பியர்; *Agattiyar* அகத்தியர்; *Athankōttāsan* அதங்கோட்டாசான்; *Dwarāpathi* துவராபதி; *Pothiyam* பொதியம்; *Kaviri* காவிரி; *Kānta-man* காந்தமன்; *Muruga* முருகன்; *Korravai* கொற்றவை; *Arivar* அறிவர்; *Thapathar* தாபதர்; *Māyōṇ* மாயோன்; *Vāliyōṇ* வாலியோன்; *Thodi-thol-Chempian* தொடித்தோட் செம்பியன்; *Indra-vila* இந்திரவிலா; *Vadimp-alamba-ninra-pandyan* வடிம்பலம்ப நீநறபாண்டியன்; *Paripadal* பரிபாடல்; *Muthu-kudumi-Peru-vazhuthi* முதுகுடுமிப்பெருவழுதி;

Pal-yāga-salai பல்யாகசாலை; *Peru-nar-killi* who performed the *Rajasuya* sacrifice இராஜசூயம் வேட்ட பெருநற்கிள்ளி; *Tiru-valluvar* திருவள்ளுவர் *Uttara veda* உத்தரவேதம்; *Kōvalan* கோவலன்; *Kannaki* கண்ணகி; *Ilanko-adikal* இளங்கோவடிகள்; *Manimekhalai* மணிமேகலை; *Ara-vana-adikal* அறவணவடிகள்; *Pukār* புகார்; *Kavirippūmpattinam* காவிரிப்பூம்பட்டினம்; *Arya-padai-kadantha-nedun-cheliyan* ஆரியப்படைகடந்த நெடுஞ்செழியன்; *Tirumular* திருமூலர்; *Karaikal ammaiyar* காரைக்காலம்மையார்; *Tirugnana-Sambandhar* திருஞானசம்பந்தர்; *Appar* அப்பர்; *Kāpālī* காபாலி; *Māvrati* மாவிரதி; *Pāsupathar* பாசுபதர்; *Āndal* ஆண்டான்; *Periyālwar* பெரியாழ்வார்; *Sundara-murti Nayanar* சுந்தரமூர்த்தி நாயனார்; *Tiru-mangai-mannan* திருமங்கைமன்னன்; *Manicka-vasagar* மாணிக்கவாசகர்; *Nighantu* நிகண்டு; *Ālwar* ஆழ்வார்; *Nayanmār* நாயன்மார்; *Jayankondan* ஜயங்கொண்டான்; *Kalingattupparani* கலிங்கத்துப்பரணி; *Meikandan* மெய்கண்டான்; *Tiruvennai-nallur* திருவெண்ணெய் நல்லூர்; *Siva-gnana-bodham* சிவஞானபோதம்; *Sakala-Agama-Panditha* சகலாதமபண்டிதர்; *Arul-nandi-Sivacharya* அருணந்தி சிவாசாரியர்; *Siva-gnana-Siddhiyār* சிவஞான சித்தியார்; *Irupa-irupathu* இருபா இருபஃது; *Marai-gnana-Sambandhar* மறைஞான சம்பந்தர்; *Umapathi-Sivacharya* உமாபதி சிவாசாரியர்; *Sankalpa-nirakaranam* சங்கற்ப நிராகரணம்; *Sthala-puranam* ஸ்தலபுராணம்; *Tiruvavaduthurai Athinam* திருவாவடுதுறை ஆதினம்; *Sivaprakāsa Desikar* சிவப்பிரகாச தேசிகர்; *Linganna* இலங்கணபத்தர்; *Kumara guru-para-swamikal* குமரகுருபர சுவாமிகள்; *Sivagra-Yogikal* சிவாக்ஷரயோகிகள்; *Veerai Alawandar* வீரர ஆளவந்தார்; *Sri Pattar* ஸ்ரீபட்டர்; *Tatwa Rayar* தத்துவராயர்; *Kannudaiya Vallalār* கண்ணுடைய வள்ளலார்; *Divya Prabandham* திவ்யப்பிரபந்தம்; *Omar* உமறு; *Pillai-perumal-Aiyengar* பள்ளைப்பெருமானையங்கார்; *Thāyumānavar* தாயுமானவர்; *Ramalinga Swamigal* இராமலிங்க சுவாமிகள்; *Arumuga Navalar* ஆறுமுகநாவலர்; *Mahamahopadhyaya Dr. Swaminatha Aiyer* மஹாமஹோபாத்யாய டாக்டர் சாமிநாதையர்; *Subrahmanya Bharathi* சுப்பிரமணிய பாரதி.

The Ancient Tamil Theatre.

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SOURCES OF STUDY.

This paper attempts to give a more or less complete account of the theatre of the Tamils of many centuries ago. Any such study cannot but bank largely upon the *Silappadikāram* and particularly on the masterly commentary of Adiyārkkunallār on the third canto called *Arangērru-kādai*, which describes Mādhavi's debut as a dancer. Several other classics such as *Maṇimēkalai*, *Jivakasintāmaṇi* and *Peruṅkadai* also contain very valuable though incidental references to the theatre. The literary source of information is further reinforced and clinched by a body of no less than forty inscriptions of the spacious days of the Tanjore Cholas. Lastly the sculptures of 108 dancing poses and jazz dancers of the Chidambaram temple shed an interesting light on an important aspect of the Tamil theatrical art of the past.

The arts of dancing and acting are ancient ones in Tamilaham. The oldest Tamil grammar attributed to Agattia and hence styled *Agattiyam* classifies Tamil literature into three categories, viz., *iyal* or prose and poetry, *isai* or musical pieces, and *nāṭakam* or drama. This classification presupposes the existence of plays and their staging before and in the time of the author. It is unfortunate that not one of them has survived the wreck of time. Later on during the Augustan Age of Tamil literature,¹ as Dr. S. K. Ayyangar puts it, many specialised works on drama seem to have been written. Adiyārkkunallār cites in his great commentary *Bharatam*, *Panchabhāratīyam*, *Bharatasēnapatīyam*, *Sayantam*, *Kūttanūl*, *Madivāṇan-nāṭakanūl*² and many others most of which had perished already in the days of the commentator himself. From the titles of some of the above books one may see clearly that a noble attempt was made to bring about a synthesis between the principles and practices of the Tamil and Sanskrit dramas. This literary activity is an index of the vogue and popularity of the theatre in the country of the Tamils in the past.

1. *Ancient India*. p. 337.

2. *Silappadikāram*. (Swaminathier's Edition—1927). pp. 79f.

TAMIL THEATRE ARCHITECTURE.

Let us now consider the Tamil theatre and its architecture. There were three kinds of theatres from their situation point of view. They were either temple theatres or palace theatres or public theatres. As regards the first an inscription of the time of Uttamasōḷa mentions a *nāṭakasāla-maṇḍapam* in the Siva temple at Tiruvadigai.³ A *nānāvidanāṭkasālai* is referred to in an inscription of Kulottunga I.⁴ Provision for the performance of plays in temples during festivals is made in certain inscriptions of Tiruvaduturai, Nallur and Tanjore.⁵ An example of the second type of theatres can be found in the *Unjaikāṇḍam* of *Peruṅkadai*, where the poet describes the *araṅgu* in which the heroine, Vāsavadatta, displays her attainments as a *vīṇā* player for the approval of the learned audience of the palace. The occurrence in the same work of a phrase "*kōin-nāṭaka-kulukkai*" means apparently corporations of players attached to the king's theatre.⁶

Of these the public theatres are the most numerous. Many references to *āḍambalam*, *kūṭṭaḍiṭam*, *kūṭṭar-palli* and *nāṭka-araṅgu* may be met with in a number of Sangam works. According to the *Silappadikāram* they were situated in the heart of the town and on car streets if not in bazaar streets.⁷ They were not merely "a small stage intended for dance"⁸ but of sufficient dimensions to suit the performance

3. M.E.R. No. 398 of 1921.

4. Ibid. No. 152 of 1925.

5. Ibid. No. 120 of 1925, 250 of 1926 and No. 124 of S. I. I. Vol. III, part 3.

6. "வாயிற் கூத்துஞ், சேரிப்பாடலுங்,
கோயினாடாகக் குழுக்களும் வருகென." *Unjaikkāṇḍam*. ll. 87 and 88.

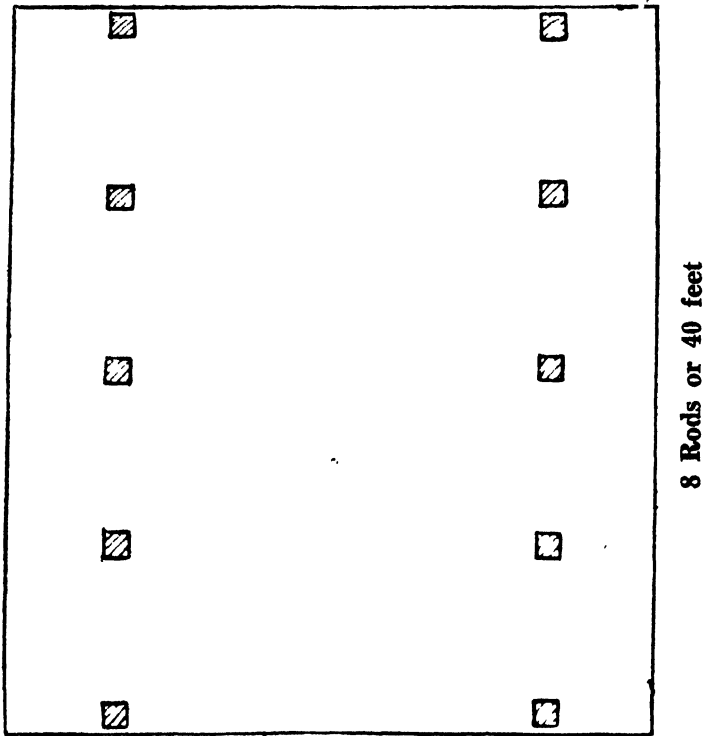
7. "ஊரகத்தாகி யுளை மான் பூண்ட
தேரகத்தோடுந் தெருவுமுக நோக்கிக்
கோடல் வேண்டும் ஆடரங் கதுவே."
Silappadikāram. *Arangērrukkada*. p. 114.

"ஆடம்பலமு மாவண மருகுந்
இதசாவையும்" *Peruṅkadai*, *Unjaikkāṇḍam*, ll. 130 and 131.

8. Triveni. Vol. IV, No. 6, p. 76, fn. i, "The *Silappadikāram* describes a small stage intended for dance."

of plays. The measurements of a normal stage are given in the *Silappadikāram*.⁹ They were reckoned in terms of a measuring rod of the length of 24 thumbs of an average size. This gives us roughly a length of 5 feet for the rod. The floor of the stage was 7 rods or 35 ft wide, 8 rods or 40 ft. long and 1 rod or 5 ft. above the floor level. The height of the hall between the floor and the cross beam above was

Ground plan of the Stage



7 Rods or 35 feet

(Scale 1 Rod = 1/2")

4 rods or 20 ft. In front of it there was a pit for the king and the nobles. Around the pit there was room for the common people. No measurements are given about the latter two.

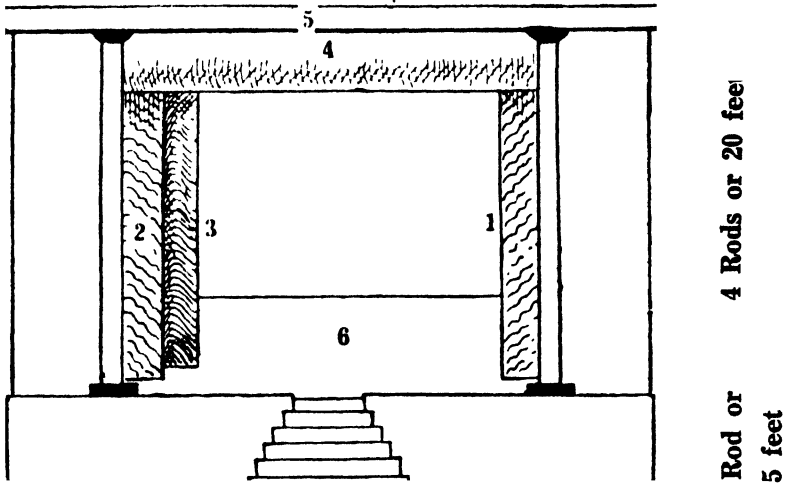
9.

“அளக்குங்

கோலன விருபத்து நால் விரலாக
எழுசோலகலத் தெண்கோ னீளத்
தொரு கோலுயரத் துறுப்பினதாடு
புத்திரப்பலகை யோடரங்கின்பலகை
வைத்த விடைநில நாற்கோலாக”

Silappadikāram, Arangērrukkadai, ll. 99-104.

Front view of the Stage



7 Rods or 35 feet (Scale 1 Rod = $\frac{1}{2}$ ")

AUDITORIUM

1. ஒருமுக எழினி or side screen (left)
2. 3. ,, Two right side screens.
4. கரந்துவரல் எழினி or 'Drop'
5. உத்தரப்பலகை or cross beam.
6. அரங்கின் பலகை or wooden floor of the stage

N.B.:—This reconstruction of the Tamil Stage is made with the help of Śilapadikāram, Aranguṟṟukāḍai ll. 100—114 and Perunkadai, Unjaikāṇḍam ll. 54-56.

This stage was suitably furnished.¹⁰ The facade was tastefully decorated with the pictures of the representative *bhutās* of the four

10. “ஏற்ற வாயி விரண்டென் பொவியத்
தோற்றிய வரங்கிற் றெழுதன ரேத்தப்
பூதரை யெழுதி மேனிலை வைத்துத்
தூணிழர் புறப்பட மாண்வினக் கெடுத்தாங்
கொருமுக வெழினியும் புரிந்துடன் வருத்தாங்
கோவிய விதானத் துரைபெறு நித்திலத்து
மாலைத்தாமம் வளையுடனாற்றி
விருந்து படக்கிடந்த வருந்தொழி லரங்கத்துப்”

Aranguṟṟukkadai, ll. 105-113.

“கொடியு மலருங் கொள்வழி யெழுதிப்
பிடியுங் களிறும் பிறவுயின்னவை
வடிமாண் சோலையொடு வகைபெற வரைந்து
நயத்திறம் பொருத்த நாடகங் கண்டும்” Unjaikāṇḍam, ll. 63-66.

castes, the *navagrahās* and stars. The interior of the stage was illumined with rows of standing lamps which were so skilfully disposed as to prevent the shadow of the pillars from falling either on the actors or on the spectators. The scenario consisted of an overhanging painted canopy, three side curtains or screens, one on the left and two on the right, and a drop which was hidden in the roof and let down as occasions arose. Sometimes the drop was painted over with the images of *dēvās*. Secreted in the floor were trap-doors. Scenes representing flower gardens, forests and caves of rishis were also used. There were two doorways which served as the way-in and the way-out for the actors. The finishing touch was given by strings of pearls which were arranged into flowing curves and waving pendants. In short, the ancient Tamils knew the art of stage furnishing.

VARIETIES OF PLAYS ENACTED.

The theatre was used both for dancing performances and the enactment of dramas. In fact in Tamil *kūttu* means dancing as well as drama. Two main varieties of plays were known. They were, namely, *sāndikūttu* and *vinōdakūttu*.¹¹ The former may be rendered as sober drama and the latter as extravaganza. The first was acted by well-born actors and the second by lower classes. *Sāndikūttu* is often mentioned in Chola inscriptions. For example, a record of the reign of Rajādirāja II says that an officer of the king provided for the performance of *sāndikūttu* on the occasion of the Arudra festival in a temple in the Pudukottah State.¹² *Sāndikūttu* comprised four kinds of *kūttu* viz., *sokkam*, *meikūttu*, *avinayakūttu* and *nāṭakam*. Of these the first was dance pure and simple involving the display of 108 poses of hands; the second was the expression of mental states through external form and songs. It was also called *agamārkkam*. An interesting inscription at Tiruvorriyur records that Rajaraja III witnessed the performance of *agamārkkam* by one Uṇavākināt-talaikōli.¹³ *Avinaya-*

11. ' இருவகைக் கூத்தினி லக்கண மறிந்து
பலவகைக் கூத்தும் விலக்கினிற் புணர்த்து.'''

Arangērrukkādai, ll. 12 and 13 and pages 80-81.

12. No. 139, Pudukottah State Inscriptions.

13. M.E.R. No. 211 of 1912.

kūttu was of an amorous sort. It consisted in the interpretation of amatory songs by means of sensuous gestures. It was also called *valla-bam*. *Nāṭakam* was any story told through the medium of action, speech and song.

Vinōdakūttu was of seven kinds. They were *kuravai*, *kalinaṭam*, *kuḍakkūttu*, *karaṇam*, *nōkku*, *tōrpāvai* and *vidhūshakakkūttu*. *Kuravai* resembled the Greek chorus. A band of young women sang the victories or the loves of a great hero or a king and danced as they sang. *Āychchiyar-kuravai* in *Silappadikāram*¹⁴ was one of love theme whereas the *Rajaraja-nāṭakam* performed in the Great Temple at Tanjore at the time of Gangaikondasōḷa had victory for its theme. Even to-day the *kuravanji-kūttu* is played during the festival of Chitirai-Sadayam, the natal star of Rajaraja the Great. *Kalinaṭam*, *kuḍakkūttu* and *karaṇam* were street shows of an acrobatic character like rope-dancing, pot-dancing and cutting of somersaults. The long belt of sculptures round the basement of the Thousand-pillared mandapam at Chidambaram illustrates these *kūttus*. *Nōkku* was necromancy and probably included mesmerism. *Tōrpāvai* was marionette show which has not perished as yet in southern India. *Vidūshakakkūttu* was a farce or a rollicking comedy, the fun of which lay particularly in the caricaturing of well-known types of men and generally it was an extravaganza of any description. This was also known as *Vasai-kūttu*.

There was still another division of drama as Tamil and Āryam. *Āryakkūttu* was obviously an adaptation of Sanskrit plays to Tamil stage. This account of *Silappadikāram* is borne out by epigraphical evidence. A Tiruvaduturai inscription of the 10th century A.D., registers the grant of land to one Kumaran Sīkandan for acting the seven *aṅkas* of *āryakkūttu*.¹⁵ Singalese and Vaḍuga varieties of *kūttu* seem to have also been known.

All the above described plays were essentially musical ones. Hence the importance attached to accompaniments. *Yāl*, an instrument of very high order, now forgotten, *kuḷal* or the flute, *taṇṇumai* or the drum now known as *mrdaṅgam* and cymbals were played in harmony with the songs of the vocalist and the dance of the actors. So the ancient Tamil drama was not merely the telling of a story in the form of dialogues but a complex of story, dialogue, dance and music.

14. 17th canto of *Silappadikāram*. p. 441.

15. M.E.R. No. 120 of 1925.

THE STATUS OF THE COMMUNITY OF ACTORS AND DANCERS.

Dancing and acting were confined to a separate *gaṇa* or corporation and hence the woman of the *gaṇa* came to be known as *gaṇika* which meant both a member of the *gaṇa* and a dancing woman and actor. In Chola inscriptions the men were called sometimes *sākkai* which in Malayalam denotes the offspring of the pre-marital liaison of a Nambudri woman.¹⁶ There is no doubt that they were an ancient institution and there was always a stigma on their community. It is problematic whether it was within the recognised pale of the Hindu caste system. Even to-day it is considered to be outside the caste frame-work though they themselves claim to be *Isai-vēḷālās*. The Manual of the Pudukottah State records the fact that "they have a high opinion of their social status stating that their profession is merely an accident."¹⁷

Their origin seems to be a mystery. The Hon. Mr. T. V. Seshagiri Iyer attempts an interesting explanation which deserves to be quoted *in extenso*. "These sea-nymphs (the *apsaras* born in the churning of the Milky Ocean) requested the *dēvās* and *asurās* to take them in wedlock. That was refused probably because they did not belong to the races inhabiting this land; ever after, they came to be known as *sādāraṇa* women It looks as if these women were from a different land, very likely they were slaves and purchased."¹⁸ The Tamil tradition as embodied in literature gives them a legendary origin. *Ūrvasi*, one of the chorus-girls of the court of Indra, was cursed once, on account of her indifference, to be born as a mortal on the earth.¹⁹ She was the progenitor of the community of *gaṇikas* and *sākkiyar*. This origin from a woman explains the custom of inheriting through the mother prevalent in the community. These facts go to show that they were outside the caste in the past. They might be foreigners stranded in India and later degenerated.

There is reason to believe that their ranks were augmented in the course of time by men and women of many castes. Economic considerations might well have played a large part in the process. An inscription of the 12th century records the sale of the wife of a *veḷḷāla* and other fourteen individuals comprising his daughter, grandsons and

16. Q.J.M.S. Vol. X. p. 208.

17. M.P.S. p. 214.

18. Q.J.M.S. Vol. XIII. p. 690.

19. *Arangērrukkādai*, l. 4; *Kaḍalādukādai*. ll. 20-24.

others to the service of the temple. Even a soldier of a royal regiment assigned certain women of his family as *dēvaraḍḍiyār* to the Tiruvallam temple and they were branded with trident mark to show that they belonged to Siva.²⁰

In spite of the fact that they were despised for shady morality they enjoyed a privileged position in society. The explanation for this paradox is that they were usually learned and well-versed in the fine arts and remarkable for charming manners. Mādhavi in *Silappadikāram* is the portrayal of a lovely courtesan, born of a distinguished family and remarkable for proficiency as a singer, dancer, and even composer.²¹ Mr. H. C. Chakladar remarks that the *ganikas*, like the *hataerae* in the classical Greece, were generally more educated and better skilled than the married woman.²² Hence the society regarded them as a necessary evil. The powers that be patronised them. They were invited as a rule to all functions in the royal household. Distinguished talent among them was rewarded by the king with honours. A pair of fly whisks and a golden parasol, a betel-and-nut case set with jewels, an elephant and a bevy of handmaids besides a title were some of the honours they received from the ruler.²³ Classical Tamil literature informs us that expert women dancers were invested with the title of *talaikōli*.²⁴ An inscription from Tiruvorriyur mentions one Urvakkina-talaikōli. Houses were granted free to them by the king and also tax-

20. M.E.R. Nos. 219 of 1925, 230 of 1921; others to the same effect are 562 of 1921, 74 of 1925, 137 of 1925, 86 of 1911 and 80 of 1913.

21.

“வானவர் மகளிர்

சிறப்பிற் குன்றூச் செய்கையொடு பொருந்திய

பிறப்பிற் குன்றூப் பொருந்தோண் மடந்தை

தாதவிழ் புரிமுழன் மாதவிதன்னை

யாடலும் பாடலு மழகு மென்றிக்

கூறிய மூன்றி னென்றுகுறை படாமல்” Arangērrukkāḍai. ll. 6-9.

“காணல்வரிப் பாடற்பாணி

நிலத்தெய்வம் வியப்பெய்த நீணிலத்தோர் மனமகிழக்

கலத்தொடு புணர்ந்தமைத்த கண்டத்தாற் பாடத்தொடங்குமன்”

Kānalvari. v. 24.

22. *Studies in the Kāmasūtra*. p. 202.

23. “சாமரை யிரட்டையுந் தமனியக்குடையு

மாமணி யடைப்பையு மருப்பியலூர்தியும்

பைத்தொடி யாயமும் பட்டமு முடையோர்” Unjaikāṇḍam. ll. 21-24.

24. “தலைக்கோலரிவை குணத்தொடு பொருந்தி

நலத்தரு பாடலும் மாடலுமிக்கோள்.” Silappadikāram. p. 118.

free lands.²⁵ Even villages were named after them. The above mentioned woman had the unique honour of lending her name to a village which was called Uravakkina-nallur. They sometimes formed an item in the presents or tributes made by one ruler to another. Not even did the temple authorities hesitate to accord certain honours and privileges to the dancing woman.

The men of the community were musicians and also tutors in dancing, singing and acting. They, in their turn, were the recipients of munificent gifts from the king of the country. Special proprietary rights over lands were given to them as *naṭṭuvakkāṇi*, *nrttyabhōga* and *sakkaikāṇi* for teaching dancing and coaching up actors.²⁶ Talented men among them were raised to high official ranks of *mārayan* and *arayan*. We meet with titles such a *vāḍyamārāyan*, *sakkaimārayan* and *niruttapē:ayan* in some Chola inscriptions.²⁷

25. “நெடு நீர்க்கழனி குழ் நியமஞ் சேர்த்தி விழுவயர்ந்து
வடி நீர் நெடுங்கண்ணார் கூத்தும் பாட்டும் வகுத்தாரே.”

Sivakasintamani, Muttūlambakam, v. 2601.

26. M.E.R. Nos. 120 of 1925, 361 of 1924.

27. M.E.R. No. 255 of 1925 and 65 of 1914.

உ
திருச்சிற்றம்பலம்
தேவாரப்பண்கள்.

By
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பண்ணைவிட்டு இசை நில்வாது ; இசையைவிட்டுப் பண்ணில்லாது ; ஆதலின் . பண்ணுமிசையுமாகிய விரண்டும் பூவும் அதன் மணமும் போலவும் ; நீரும் அதன் மணமையும் போலவும் அத்துவிதமாக நிற்கும் . இதனை :—

- “ பண்ணென்ற விசைபாடுமடியார்கள் ” (திருஞான-பண்-சீகாமரம்)
- “ பண்ணும்பத மேழம்பல வோசைத்தமிழவையும் ” (திருஞான-பண்-நட்டபாடை)
- “ பண்ணி லோசை பழத்தினிலின்சுவை ” (திருநா-பண்-இந்-திருக்குறுந்தொகை)
- “ பண்பொருந்த விசைபாடும் பழனஞ்சேரப்பனை ” (திருநா-பண்-பழந்தக்கராகம்)
- “ பண்ணி னிசையாகி நின்றாய் போற்றி ” (திருநா-திருத்தாண்டகம்)
- “ பண்ணையு மோசையும் போல ” (சிவஞானபோதம் . 2. கு . க அதிகரணம்)
- “ பண்ணிசை வெம்பரிதிமதி ” (சிவஞானசித்தியார்)

எனவரும் திருஞானசம்பந்தர் தேவாரத்தானுந் திருநாவுக்கரசர் தேவாரத்தானுஞ் சிவஞானபோதஞ் சிவஞானசித்தியாரிலுள்ள பாசுரங்களானு மறிக்க .

அன்றியும் , உமாபதிசிவாசாரியாருந் திருமுறைகண்ட புராணத்துப் பண்ணுமிசையும் அத்துவித மெனக்கொண்டிருத்தலை :—

- “ இன்னிசையாற்றருந் தக்கராகத்து ”
- “ இசைக் காந்தார பஞ்சமத்தின் ”
- “ புல்லுமிசைப் புறநீர்மைக்கு ”
- “ ஈண்டிசைசே ரிந்தளத்துக்கு ”
- “ இன்னிசைதேர் தக்கேசிப் பேரிசை யாருக்கி ”
- “ கூறுமிசை யொன்றாகக் காமரத்துக்கு ”
- “ உற்றவிசைக் குறிஞ்சிக்கு ”

“ கவுசிகப்பாற் றுற்றவிசை யிரண்டாக்கித் தூயவிசைப்பஞ்சமத்துக் கற்ற விசை யொன்றாக்கி ” எனவரும் இப்பாசுரங்களின் பிரிவுகளாலுங் காண்க

இன்னும் சிலப்பதிகாரம் அரங்கேற்று காதையில்,

“ வங்கியத்தின் ஏழ்துளையில் சரிகமபதரி யென்னு மேழெழுத்தையும் மாத்திரைப்படுத்தித் தொழில்செய்ய இவற்றுள்ளே ஏழிசையும் பிறக்கும் . இவைபிறந்து இவற்றுள்ளே பண்கள் பிறக்கும் . என்னை,

‘ சரிக மபதரியென் றேழெழுத்தாற் றுனம்
வரிபரந்த கண்ணினய் வைத்துத்—தெரிவரிய
ஏழிசையுந் தோன்று மிவற்றுள்ளே பண்பிறக்குஞ்
சூழ்முதலாஞ் சுத்தத் துளை’

என்றாகலின் .

மூலாதாரத் தொடங்கி எழுத்தினதும் ஆளத்தியாய்ப் பின் இசையென்றும் பண்ணென்றும் பெயராம். என்னே?

‘பாவோ டணைத லிசையென்றார் பண்ணென்றார்
மேவார் பெருந்தான மெட்டானும்—பாவா
யெடுத்தன் முதலா விருநான்கும் பண்ணிப்
படுத்தமையாற் பண்ணென்று பார்’

பல இயற்பாக்களுடனே நிறத்தை இசைத்தலால் இசை யென்றுபெயராம் பெருந்தானம் எட்டினும் கிரியைக ளெட்டாலும் பண்ணிப் படுத்தலாற் பண்ணென்று பெயராயிற்று.

பெருந்தான மெட்டாவன:—நெஞ்ச மிடறு நாக்கு மூக்கு அண்ணாக்கு உதடு பல் தலை யெனவிவை

கிரியைக ளெட்டாவன:—எடுத்தல் படுத்தல் நலிதல் கம்பிதம் குழலம் ஒலி உருட்டு தாக்கு எனவிவை”

என்றடியார்க்கு நல்லா ரெழுதிய உரைப்பகுதியானும் பண்ணுமிசையு மத்துவிதமென விளங்குமாறறிக.

பல இயற்பாக்களுடனே நிறத்தை இசைத்தலா லிசையாமென்பதனை,

“புறம்பயத் திறைவரை வணங்கிப் போற்றிசெய்
திறம்புரி நீர்மையிற் பதிகச் செந்தமிழ்
நிறம்பயி லிசையுடன் பாடி நீடிய
அறந்தரு கொள்கையா ரமர்ந்து மேவினார்”

“நிறம்பயி லிசை” எனச் சேக்கிழார் நாயனார் பெரியபுராணம் திருஞான சம்பந்தர் புராணம் 241 ம் பாடலிற் கூறியவாற்றாணுமறிக.

தேவாரத்தில் வந்துள்ள பண்கள். 21.

தேவாரப்பண்கள் இருபத்து நான்கென்றும். இருபத்தேழென்றும், இருபத் தெட்டென்றுஞ் சிலர் கொள்கின்றனர். அவ்வனங் கோடல் பொருந்தா தென்பத னைக் கீழ்வருமாற்றாலுணர்க.

திருக்கழுமலம், திருத்தாளச்சதி, பண். வியாழக்குறிஞ்சி.

“பந்தத்தால்” என்னுந் திருப்பதிகக் கடைக்காப்பு.

“கஞ்சத்தே னுண்டிட்டே களித்துவண்டு சண்பகக்
கானே தேனே போராருங் கழுமல நகரிறையைத்
தஞ்சைச்சார் சண்பைக்கோன் சமைத்தநற்க லைத்துறை
தாமே போல்வார் தேனேரார் தமிழ்விந கனமொழிக

ளெஞ்சத்தேய் வின்றிக்கே யிமைத்திசைத் தமைத்தகொண்
 டேழே யேழே நாலேமூன் நியலிசை யிசையியல்பா
 வஞ்சத்தேய் வின்றிக்கே மனங்கொளப் பயிற்றுவோர்
 மார்பே சேர்வாள் வாநோர்சீர் மதிநுதல் மடவரலே.”

என்னுந் திருக்கடைக்காப்பில் “ஏழே யேழே நாலே மூன்றியலிசை” எனத் திருஞானசம்பந்தமூர்த்தி நாயனாரே பண்க ளிருபத்தொன்றென்று வரையறை செய் தருளியிருத்தலாலும் இதற்கேற்பத் தொன்றுதொட்டுத் திருவாவடுதுறை யாநீனத் தும் இருபத்தொரு பண்களென்றே கொண்டு நாள துவரை யோதப்பட்டுவரு மாட்சி யனுபவ முண்மையாலும் பண்க ளிருபத்தொன்றென்று கோடலே பொருத்தமாம். ஆயின், திருஞானசம்பந்தருந் திருநாவுக்கரசருஞ் செய்தருளிய திருப்பதிகங்களிற் செந்துருத்திப் பண் பதிகமில்லாதிருக்க, அவ்விருவர்க்குப் பின்வந்த சுந்தரமூர்த் தியே அப்பண்ணமைந்த “மீளாவடிமை” என்னுந் திருப்பதிகஞ் செய்தருளினாராக லான் அச்சுந்தரர்க்கு முன்னிருந்த திருஞானசம்பந்தர் அச்செந்துருத்திப் பண்ணை யுஞ்சேர்த்து “ஏழே யேழே நாலே மூன்று” என்றெங்ஙன மிருபத்தொன்றாக வரை யறுத்தாரெனில், அத்திருஞானசம்பந்தர் தாமோ திருநாவுக்கரசர் தாமோ செந்து ருத்திப் பண்பதிகம் செய்திருத்தல் வேண்டும்; அப்பதிகம் இரந்துபோன பதிகங் களோடு சேர்ந்திருக்கலாமென்று ஊகிக்கத்தக்கதாகின்றது.

அன்றியும், “ஈரரு பண்ணு மெழுமூன்று திறனு-மாகின்றனவிலை” என்ற ராகவிற்பாலை குறிஞ்சி மருதம் செவ்வழி யென்னு நாற்பண்ணும் இருபத்தொன்றா கின்றன வென்னு மிசையிலக்கணத்தை யனுசரித்து அங்ஙன மிருபத்தொன்றெனத் தொகைகொண்டருளினு ரென்றலுமாம்.

பண்ணும் இராகமும் அத்துவிதமாயிருத்தலினாலேயே ஆதியிலிருந்த ஆன் றோர்கள் ஒவ்வொரு பண்ணுக்குமுள்ள இராகங்களைக் கண்டே யோதிவந்திருக்கிறா் கள். திருவாவடுதுறையாதீன எட்டுப்பிரதிகளில், “கொல்லம் 917 ளுல் துன் முகி ளுல் மாசிமீ 4௭ எழுதிருமிந்தது” என்று இறதியிலெழுதியிருக்கும் ஒரு சித் தார்த சாஸ்திர எட்டினோரிடத்திலே கண்டவை வருமாறு—

பண்.	இராகம்.
1. புறநீர்மை	ஸ்ரீகண்டி
2. காந்தாரம், பியந்தைக்காந்தாரம்	இச்சிச்சி
3. கௌசிகம்	பயிரவி
4. இந்தளம், திருக்குறுந்தொகை ...	நெளிதபஞ்சமி
5. தக்கேசி	காம்போதி
6. நட்டராகம், சாதாரி	பந்துவராளி
7. நட்டபாடை	நாட்டைக்குறிஞ்சி
8. பழம்பஞ்சரம்	சங்கராபரணம்
9. காந்தாரபஞ்சமம்	கேதாரகௌளை
10. பஞ்சமம்	ஆகிரி

இப்பத்தம் பகற்பண்களாம். பகல் மூன்றாழிகையிலிருந்து மும்மூன்று நாழிகையாக ஒவ்வொரு பண்ணுக்கும் முறையே மேலேற்றிக் காலவரையறை கொள்க.

11. தக்கராகம்	...	...	கன்னடகாம்போதி
12. பழந்தக்கராகம்	...	...	சுத்தசாவேரி
13. சீகாமரம்	...	...	நாதநாமக்கிரியை
14. கொல்லி, கொல்லிக்கொளவாணம், திருநேரிசை, திருவிருத்தம்	...	...	வலிந்துகந்நடா
15. வியாழக்குறிஞ்சி	...	...	சௌராஷ்டிரம்
16. மேகராகக்குறிஞ்சி...	...	...	நீலாம்பரி
17. குறிஞ்சி	...	...	மலகரி
18. அந்தாளிக்குறிஞ்சி	...	...	ஸைலதேசாட்சி

இவ்வெட்டும் இராப்பண்களாம் இராமூன்றேழுக்கா ஞாழிகையிலிருந்து மூன்றேழுக்கால் மூன்றேழுக்கா ஞாழிகையாக ஒவ்வொரு பண்ணுக்கும் முறையே மேலேற்றிக் காலவரையறை கொள்க.

19. செவ்வழி	...	...	எதுகுலகாம்போதி
20. செந்துருத்தி	...	...	மத்தியமாவதி
21. திருத்தாண்டகம்	...	...	பியாகடை

இம்மூன்றும் பொதுப்பண்களாம். பகலிராவில் எக்காலமும் பொதுவாக வுரியன வாகையாற் பொதுப்பண்களாயின.

இராக சுரங்கள்.

ஸ்ரீகண்டி — ஸ க ம ப த நி ஸ - ஸ நி த ப ம க ஸ
வலிந்துகந்நடா—ம க ம ரி க ம ப ஸ - ஸ நி த ப ம க ரி ஸ
ச - ரி - அம் - க - ச - த - கை - நி
ஸைலதேசாட்சி—ஸ ரி க ம ப ம த நி ஸ - ஸ நி ப ம க ம ரி ஸ
ஷ - ரி - அம் - கா - ஸ - த - கா - நி.

இவையே முன்சொன்ன ஏட்டினோரிடத்திற் கண்டவை. பிங்கலநிகண்டு முதலிய சில நூல்களிற்கண்ட சில பண்களின்,

பரியாய நாமங்கள்.

புறநீர்மைக்கு நேர்திறமென்பதும், காந்தாரத்துக்குச் சாரலென்பதும், இந்த னத்துக்கு வடுகென்பதும், தக்கேசிக்கு நவிரென்பதும், சாதாரிக்கு முல்லையென்பதும், ஈட்டபாடைக்கு வைவளமென்பதும், பழம்பஞ்சுரத்துக்குப் பஞ்சுரம் செருத்தி யென்பனவும், காந்தாரபஞ்சுரத்துக்கு உறழ்பு நாட்டமென்பனவும், பஞ்சுரத்துக்கு

அயிர்ப்பென்பதும், கொல்லிக்கௌவாணத்துக்குப் படுமலையென்பதும். திருவிருத்தத்துக்குப் பாலையாழென்பதும் குறிஞ்சிக்கு அரற்றென்பதும், செந்துருத்திக்குச் செந்திறமென்பதும் பரியாயநாமக்களாகப் பங்கலரிகண்டுமுதலிய சிலநூல்களிற் காணப்படுகின்றன.

காந்தாரபஞ்சமத்துக்கன்றித் திருநேரிசைக்கும் நாட்டம் என்னும் பெயர்காணப்படுகின்றது.

திருவாய்மொழியில் வியந்தம், பாலையாழ். நாட்டம். செருந்தி. முதிர்ந்தகுறிஞ்சி, கைசிகம் முதலாகச் சில பண்களுள்ளன.

திருக்குறந்தொகை. ஈரடி, திருவிராகம், திருமுக்கால். யாழ்முறி. திருத்தாள் சதியாதிதாகச் சொல்லப்படுவன வெல்லாம் பண்ணுல்வந்தபெயர்களல்லவாம்; பாவிதற்பத்தானும் பிறகாரணங்களானும் வந்த பெயர்களாம்.

செவ்வழிப்பண்ணமைந்த திருப்பதிகங்கள் திருஞானசம்பந்த நாயனாரொருவரேயருளிய அம்மட்டிலுள்ளன. செந்துருத்திப் பண்ணமைந்த திருப்பதிகம் சுந்தரமூர்த்தி நாயனாரொருவரேயருளிய அம்மட்டிலுள்ளது. அதுவும் “மீளாவடிமையுமக்கே” என்னும் திருவாரூர்த் திருப்பதிகமொன்றே திருத்தாண்டகம் திருநேரிசை திருவிருத்தம் திருக்குறந்தொகையாகிய இவையமைந்த திருப்பதிகங்கள் திருநாவுக்கரசநாயனாரொருவரேயருளிய அம்மட்டிலுள்ளன.

யாழ்முறிப்பதிசமாகிய “மாதர் மடப்பிடியும்” என்பது மேகராகக் குறிஞ்சியிலும்; திருத்தாள்சத்திப்பதிசமாகிய “பந்தத்தால் வந்தெப்பால்” என்பது வியாழக் குறிஞ்சியிலும் அடங்கும். திருவிராகமென்பது இந்தளம் சாதாரி நடப்பாடையென்னு மிவையமைந்த திருப்பதிகங்களிலே சில முடுகிசையாயுள்ளனவற்றிற்குப் பெயராகிவருகின்றது; அஃது ஒரு பண் அன்று. இராகம் என்பது அராகமெனவும் வரும்.

“அராகஞ் செந்நிறமே பாலையாழ்முடுகிசைநாட்டாசை” என்பது; நிகண்டாகலின் இராகம் என்பது முடுகிசையாம்.

பண்களோதுதற்குரிய காலவரையறை இசைநூல்களிற் சொல்லப்பட்டுள்ளனவோ வென்னில்; திருவாவடுதுறை யாதீனத்தந்தருமபுரவாதீனத்தும் ஒதுவாமூர்த்திகள் ஒதிவந்த ஆட்சியே காலவரையறை கோடற்குக் காரணமென்பதும் அவ்வாட்சி பற்றியே இறந்துபோன இசைநூல்களிற் காலவரையறை சொல்லப்பட்டிருத்தல் வேண்டியென்பதும் கொள்ளக்கிடக்கும். இது பின்வருமாற்றால் விளங்கும்

“பாடல் பயிலும் பணிமொழி தன்பணைத்தோள்

கூட லவாவாற் குறிப்புணர்த்தும்—ஆடவற்கு

மென்றீர் தொடையாழின் மெல்லவே தைவந்தாள்

இன்றிக் குறிஞ்சி இசை”

என்று நுட்பவணிக்கு மேற்கோளாகத் தண்டியலங்காரத்திலே எடுத்துக் காட்டப்பட்ட இச்செய்யுட் பழையபுரையுள் “இங்கே குறிஞ்சியிசையைப் பாடுதலாகிய தொழிலிலுலே இடையாமத்திலே கூடுதற்கு நேர்த்தாளென்பது அநுமானித்தறியப்படும். குறிஞ்சிக்குச் சிறுபொழுது இடையாமமெனவறிக” எனக் குறிஞ்சிப் பண்ணுக்குக் காலவரையறை இடையாமமெனக் காணப்படுகிறதற்கேற்ப முன் சொன்ன ஆதினகர்த்தர்களாகிய மடாதிபதிகள் மார்கழிமாதத்தி லிடையாமத்தெழு

ந்து நித்யகர்மாறுட்டானங்களை முடித்துக்கொண்டு பூசாமட்டுசென்று பூசிக்கும் அப்பூசாகாலத்திலேதான் குறிஞ்சிப்பண்ணேதுவதை ஒதுவாமூர்த்திகள் வழக்கமாகக் கொண்டிருக்கிறார்கள். பிறகாலத்தி லோதுவதில்லை.

பேரியபுராணம் ஏயர்கோன் கலிக்காமநாயனார் புராணம்.

அன்றுதிரு நோக்கொன்ற லாரக்கண் டின்புற்றார்
நின்றுநில மிசைவீழ்ந்து நெடிதுயிர்த்து நேரிறைஞ்சி
வன்றொண்டர் திருவாரூர் மயங்குமா லையிற்புகுந்து
துன்றுசடைத் தூவாயார் தமைமுன்னந் தொழுவணைந்தார். (302)

பொங்குதிருத் தொண்டருட னுள்ளணைந்து புக்கிறைஞ்சித்
துங்கவிசைத் திருப்பதிகந் தூவாயா வெனவெடுத்தே
யிங்கெமது துயர்களைந்து கண்காணக் காட்டாயென்
றங்கணர்த முன்னின்று பாடியருந் தமிழ்புனைந்தார். (303)

ஆறணியுஞ் சடையாரைத் தொழுதுபுறம் போர்தங்கண்
வேறிருந்து திருத்தொண்டர் விரவுவா ருடன்கூடி
யேறுயர்த்தார் திருமூலத் தானத்து ளிடைதெரிந்து
மாறிரு வத்தயா மத்திறைஞ்ச வந்தணைந்தார். (304)

ஆதிதிரு வன்பரெதி ரணையவவர் முகநோக்கிக்
கோதிலிசை யாற்குருகு பாயவெனக் கோத்தெடுத்தே
ஏதிலார் போல்வினவி யேசறவாற் றிருப்பதிகந்
காதல்புரி கைக்கினையாற் பாடியே கலந்தணைவார். (305)

இந்நான்கு பாக்களில் ‘வன்றொண்டர் திருவாரூர் மயங்குமாலையிற்புகுந்து’
‘துங்கவிசைத் திருப்பதிகந் தூவாயாவெனவெடுத்தே’ என்பவற்றாலும்; ‘அத்தயா
மத்திறைஞ்ச வந்து’ ‘குருகுபாயவெனக் கோத்தெடுத்தே’ என்பவற்றாலும்
முறையே பக் 27 நாழிகை தொடங்கி 30 நாழிகை வரையுமாகிய மாலேக்காலத்
திற்குரிய பஞ்சமப்பண்ணமைந்த திருப்பதிகமும்; இரா-11½ நாழிகை தொடங்கி
15 நாழிகைவரையுமாகிய அர்த்தயாமகாலத்திற்குரிய கொல்லிப்பண்ணமைந்த திருப்
பதிகமுமாகின்றன. ஆகையால் தேவாரத் திருவாய்மலர்ந்தருளிய சமயாசாரியர்கள்
தாம் ஒவ்வொரு தலத்துக்குஞ் சென்றருளிய காலம் எக்காலமோ அக்காலத்துக்குரிய
பண்களையே பெரும்பாலு மமைத்துப் பாடினார்களென்பது பெறப்படுகின்றது.
ஆகவே, பஞ்சமப்பண் கொல்லிப்பண்ணாகிய இவ்விரண்டு பண்களுங் காலநியமம்
தவறாமலே இந்நாள்வரையுமோதுவா மூர்த்திகளால் ஆதீனங்களி லோதப்பட்டு
வருகின்றன. ஒதுவாமூர்த்திக ளோதவரும் பண்களில் குறிஞ்சி. பஞ்சமம். கொல்லி
யென்னும் இம்மூவகைப்பண்களுக் கேற்பட்ட காலவரையறை மேற்காட்டியவற்
ற்றிற் கு ஒத்திருத்தலால் அவர்கள் ஏனைய பண்களுக்குக் கொண்டிருக்குங் காலவரை
யறையும் முன்னிருந்த இசைநூல்களுக்கு ஒத்ததென்றே கொள்ளத்தக்கது.

The Doctrine of Sphoṭa

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Three types of Monism in the Brāhmaṇas and the Upaniṣads.

The doctrine of Sphoṭa is generally explained as the conception of one eternal śabda—sound as the ultimate reality of the world. This is otherwise known as the *śabdādvaita* or śabda-monism as some Brāhmaṇas and Upaniṣads would have it; they also mention two other conceptions of monism—sattā-monism and vijñāna-monism. The germs of sattā-monism and vijñāna-monism are fully developed¹ into two different schools of philosophy by Śrī Śaṅkarācārya, the stadtholder of the advaita philosophy and by Gautama Buddha, the founder of the Buddhist philosophy respectively. The latter had the misfortune to impart his gospel to four disciples in whose hands four different unpopular schools of Buddhist philosophy² developed.

Śabdādvaita in the Upaniṣads and in other works.

One popular explanation of the śabda-monism is found in the *oṅ-kāropāsti*³ of the Māṇḍūkyaopaniṣad. In other vedic texts⁴ also are

1. Reference may be made here to Jayanta-bhaṭṭa's Nyāyamañjarī where we have an elucidation of the three schools of monism. [No. 10. Vijayanagaram Series. pages 531-538.]

2. The four schools of Buddhism are:—

- (a) The Yogācāra or Vijñānavāda school;
- (b) The Nihilistic or Mādhyamaka school;
- (c) The Sautrāntika school; and
- (d) The Vaibhāṣika school.

3. Compare Śrī Śaṅkarācārya's remark—'nediṣṭhamidaṁ brahmaṇaḥ abhidhānaṁ yat Oṅkāraḥ iti'.

4. 'Pṛaṇava evaikaḥ tridhā vyabhajyata;'

'nāmedam rūpatvena ca vṛttarūpam

rūpam cedam nāma bhāvena taste;

eke tadekamavibhaktaṁ vibhejūḥ

prāgevānye bhedarūpaṁ vadanti."

'Vāgeva viśvā bhuvanāni jajñe

vāca it sarvamaṁṛtaṁ yacca martyam."

'Oṅkāro vai sarvā vāk'

'vācīmā viśvā bhuvanāyārpitā.'

found references to speech or śabda as the ultimate reality of the world. But it becomes systematised in the hands of the sanskrit grammarians, Pāṇini, Kātyāyana and Patañjali. They hold—‘ehaḥ śabdaḥ suṣṭu jñataḥ samyak prayuktaḥ svarge loke kāmādhuk bhavati’.

Pāṇini's Conception of Sphoṭa

The correct explanation of śabdādvaitya in the form of sphoṭa is not given by Pāṇini and Kātyāyana in their works—the Aṣṭādhyāyī and the Vārtikas respectively; yet Pāṇini's very few sūtras like ‘*tad aśiṣyam saṁjñāpramāṇatvāt*,’ embody the essence of the sphoṭa-doctrine. He believes that words have long been in existence and their continuous usage alone is the best authority (pramāṇa) for their correctness (sādhutva). What the Grammarians can do is to record the correct usage of the correct words in language, in a systematic way; similarly on questions of gender, case etc., of the words, Pāṇini says that the time-honoured convention (anādivyavahāra) alone is the final authority.⁵ And it is in this sense that the Vyākaraṇa Śāstra is known as an *anvākhyānaśāstra*⁶—that which records and explains śabdās as they actually exist in usage.⁷

Kātyāyana's View of Śabdanityatva.

Kātyāyana's elucidation of śabda takes us nearer the sphoṭa doctrine. He does not, however, make mention of the word ‘sphoṭa’ but lays down in his famous Vārtika—‘Siddhe śabdārthasambandhe lokato arthaprayukte śabdaprayoge śāstreṇa dharmaniyamo yathā laukika-vaidikeṣu’—the great principle that śabda is nitya, artha is nitya, and their relation viz. vācyavācakabhāva is nitya. This is the very fundamental of the sphoṭa doctrine.

5. Compare the vārtika—‘līngamaśiṣyaṁ lokāśrayatvāt līngasya.’

6. In his Mahābhāṣyapradīpodyota (Page 5. N. S. Edition) Nāgeśa explains the unique character of the Mahābhāṣya as both a commentary and an original treatise—‘vyākhyātrtvepi asya iṣṭyādikathanena anvākhyātrtvāt itarabhāṣyavai-lakṣaṇyena mahatvam.’

7. Pāṇini's reference to the sage sphoṭāyana in the sūtras—‘avaṁ sphoṭāyanasya,’ etc., cannot be taken as fully establishing the view that the sphoṭa doctrine was founded by sphoṭāyana. The suggestion is only a conjecture in the absence of further materials.

Patañjali's Contribution to Sphoṭa.

Both Vyāḍi, the author of the Saṅgraha⁸ and Patañjali,⁹ the author of the Mahābhāṣya, have accepted the sphoṭa doctrine, as may be seen from the following passage in the Mahābhāṣya:—"atha gaurityatra kaḥ śabdaḥ? yenocāritena sāsnaṅgūlakakudakhuraviṣāṇinam sampratyayo bhavati sa śabdaḥ." (Mahābhāṣya—Paspasāhnikā. N.S. Ed. Pages 12-16). That which is the seat of vācakatā is śabda, so maintain Patañjali and his followers,¹⁰ and this establishes the eternity of śabda, viz., sphoṭa, the sonant substratum. Patañjali makes mention of the sphoṭa doctrine in the Pratyāhārāhnikā¹¹ also. He distinguishes the sphoṭa śabda from dhvani in the following verse in his taparasūtrabhāṣya 1, 1, 68:—"Dhvaniḥ sphoṭasca śabdānām dhvanistu khalu lakṣyate. Alpo mahāmśca keṣāñcit ubhayam tadviśeṣataḥ." (N. S. Ed. p. 517). Dhvani is produced by vibrations of air and it undergoes both modification and destruction. And this is not the real śabda. The cognitions or experiences of mahatva, alpatva, etc., in śabda are superimpositions (adhyāśas) of the properties of dhvani on śabda. The relation between dhvani and sphoṭa is the same as that between the prapañca and the Absolute, as explained by the Advaitins. Generally dhvani becomes the object of cognition or experience. The identity between dhvani and sphoṭa can be understood only by yogins who realise the Highest Reality—Brahman. This principle, here enunciated by Patañjali, he himself says, is the theory of Pāṇini—'Sarve sarvapadādeśāḥ dākṣi-putrasya Pāṇineḥ.' (N. S. Ed. page 263).

Later Authors before Bhartṛhari on the Sphoṭa.

Besides Pāṇini, Kātyāyana and Patañjali, other important śāstra-kāras who flourished long before Bhartṛhari, the author of the Vākya-pādiya, have mentioned this sphoṭa doctrine in their works and they

8. Nāgeśa in his Udyota (N. S. Edition p. 55.) remarks—"Saṅgraho vyāḍikṛto lakṣaślokaśaṅkhyo grandha iti prasiddhiḥ." Also Puñjarāja in his commentary on Bhartṛhari's Vākya-pādiya (Kāṇḍa II. verse 484. Benares Edition, page 283) says—"iha purā pāṇiniye asmin vyākaraṇe vyādyuparacitaṁ granthalakṣa-parimāṇaṁ saṅgrābhidhānam nibandhanamāsīt."

9. Patañjali is believed to be the incarnation of Ādiśeṣa and he is responsible for three works: (1) the Mahābhāṣya in Sanskrit Grammar, (2) Yogasūtras in the yoga system of Indian Philosophy, and (3) Carakasamhitā in Indian medicine. Compare Bhartṛhari's verse in his Vākya-pādiya, Kāṇḍa I. verse 148.

10. Kaiyaṭa in his Bhāṣya-pradīpa (N. S. Ed. p. 16) explains the above bhāṣya as an elucidation of the sphoṭa śabda which is only manifested by dhvanis.

11. "athavā ubhayaḥ sphoṭamātraṁ nirdīśyate—raśruteḥ laśrutiḥ bhavati iti"—(N. S. Ed. page 107.).

have made adverse criticisms of it. Conspicuous among them are Upa-varṣa, the famous vṛttikāra in the Pūrva and Uttara Mimāṃsā systems, Śabarasvāmin, the author of the bhāṣya on the Pūrvamimāṃsāsūtras and Vātsyāyana, the author of the Nyāyasūtrabhāṣya.

The Position of the Vyākaraṇa Sāstra just before Bhartṛhari.

During the first five or six centuries of the Christian era, great attention was not paid to the study of the Sanskrit grammar, much less of the philosophy of śabda. Bhartṛhari says at the end of the second kāṇḍa of his Vākyapadiya¹² that the southerners alone studied the text of the 'sacred' Mahābhāṣya, while the sacred āryāvarta concentrated on the dry logic (śuṣkatarka) of Baiji, Haryakṣa and Saubhava, etc. Candragomin whom Bhartṛhari refers to as Candrācārya and to whom a Brahmarakṣas gave the Vyākaraṇāgama written and kept hidden under a rock by Rāvaṇa at the Trikūṭa mountain,¹³ is the author next responsible for the revival and further development of the Pāṇiniyan school of Sanskrit grammar. This Cāndrācārya is known as the author of the Cāndrāvyākaraṇa which is nothing but an amplifica-

12. The Mahābhāṣya is known as āṛṣa and saṅgrahapratikañcuka—the sacred strong substitute for Vyādi's Saṅgraha which somehow fell into the hands of some petty grammarians and extinguished for ever. cf. Verses 484 to 493.

'Prāyeṇa saṅkṣeparucīn alpavidyāparigrahān;
saṁprāpya vaiyākaraṇān saṅgrahestamupāgate.
Kṛte atha Patañjalīnā guruṇā tirthadarśinā;
sarveṣāṃ nyāyabījānāṃ mahābhāṣye nibandhane.
Alabdhaḡādhe gāmbhīryāt uttāna iva sauṣṭhavāt;
kasmin akṛtabuddhīnāṃ naivāvasthitaniścayaḡ.
Baiji-Saubhava-Haryakṣaiḡ śuṣkatarkānusāribhiḡ;
ārṣe viplāvite granthe saṅgrahapratikañcuke.
Yaḡ Patañjaliśiṣyebhyo bhraṣṭo vyākaraṇāgamaḡ;
kāle sa dākṣiṇātyeṣu granthamātre vyavasthitaḡ.
Parvatādāgamāṃ labdhvā bhāṣyabījānusāribhiḡ;
sa nīto bahusākhatvam Candrācāryādibhiḡ punaḡ
Nyayaprasthānamārgāmstānabhyasya svañca darśanam;
praṇīto guruṇāsmākaṃ ayamāgamasaṅgrahaḡ.
Vartmanāmatra keṣāñcit vastumātramudāhṛtam;
kāṇḍe tṛtiye nyakṣeṇa bhaviṣyati vicāranā.
Prajñā vivekaṃ labhate bhinnairāgamadarśanaiḡ;
kiyadvā śakyamunnetuṃ svatarkamanudhāvataḡ.
Tattadutprekṣamāpāṃ purānairāgamaiḡ vinā;
anupāsita-vṛddhānāṃ vidyā nātiprasīdati'.

13. Puñjarāja comments the verse—'Parvatādāgamam labdhvā' etc., as follows:—Parvatāt Trikūṭaikadeśavartitrilīṅgaikadeśāt iti. taṭra hi upalatale Rāvaṇaviracito mūlabhūtavayākaraṇāgamāḡ tiṣṭhati kenacicca brahmarakṣasā āṇiya candrācārya-vasurātaguruprabhṛtīnāṃ datta iti." (V. Padiya. p. 285.).

tion of the Pāṇiniyan system. From him, perhaps, Vasurātasūnu has studied the Mahābhāṣya which in turn was learnt and popularised by Bhartṛhari who, on the lines enunciated by Patañjali, systematised the sphoṭa doctrine in his famous Vākyapadīya.

Bhartṛhari's Date and works.

Before we speak of Bhartṛhari's contribution to the sphoṭa doctrine (as explained in the Brahmakāṇḍa of his Vākyapadīya), a word on his date and literary attainments may not be out of place.¹⁴ I-tsing, the Chinese traveller, mentions in his 'Travels' Bhartṛhari's death about 650 A.D. This is the most authentic external evidence for his date. This and the other internal evidences justify the conclusion that Bhartṛhari flourished during the first half of the 7th century. His famous commentary on the Mahābhāṣya known as Tripādī (which extends only to the first three pādas of the first chapter of the Aṣṭādhyāyī) and his metrical Vākyapadīya¹⁵ with his own vṛtti on the philosophy of grammar, his ṭikā, known as Hariṭikā, on the Pūrvamīmāṃsāsūtras quoted by Pārthasārathimīśra¹⁶ of 9th or 10th century A.D. and his

14. The identity between Bhaṭṭi and Bhartṛhari is suggested by Prof. Pathak on the supposition that the word *Bhaṭṭi* is a contracted prakṛtic form of Bhartṛhari. This suggestion is not yet finally accepted.

15. There is every probability for the Vākyapadīya being a fitting introduction to Hari's own ṭikā on the Mahābhāṣya.

16. In his Śāstradīpikā X. 2, 22, Pārthasārathi Mīśra quotes one Hari—'tathāca haribhiḥ uktam (*hariniruktam*)' etc. Will this one quotation be sufficient to prove the above view? Similarly, many scholars base their view that Bhartṛhari has written a commentary on the Brahma Sūtras, on a reference made by Yāmunācārya in his Siddhitrāya "yadyapi bhagavatā Bādarāyanena idamarthānyeva sūtrāṇi pranītni tathāpi ācārya ṭaṅka-bhaṭṭaprapaṅca-bhartṛhari-brahmadatta-Śaṅkara-Śrī Vatsāṅka-bhāskarādiviracitasitāsativividhanibandhanasraddhāvīpralabdhābuddhāyo na yathāvat anyathā ca pratipadyante iti tatpratipattaye ca yuktaḥ prakaraṇaprakramaḥ."—(Benares Edition pages 4-5.). I am, however, inclined to believe—until more positive evidence is forthcoming—that Bhartṛhari has discussed most of the mīmāṃsā doctrines of the 12 chapters as applied to loka and the Vyākaraṇa Śāstra in his Vākyapadīyaṭikā itself (from which P. Mīśra might have cited), a summary of which we have in Puñjarāja's commentary on Kāṇḍa II. Verses 79-85. (Benares Edition. pages 100-116.). Similarly, Bhaṭṭoji Dīkṣit's remark in his Śabdakaustubha (Benares Edition. p. 12.) "tadevam varāṭikānveṣaṇāya pravṛttaḥ cintāmaṇim labdhavāniti vāsiṣṭha-rāmāyaṇoktābhāṇakan yāyena śabdavicārāya pravṛttaḥ san prasāṅgāt advaite upaniṣade Brahmanyapi vyutpādyatāmīti abhiprāyeṇa bhagavān Bhartṛhariḥ Vivarta-vādādikamapi prasāṅgāt vyudapādayat"—makes one believe that if Bhartṛhari had ever an idea to comment on the Brahmasūtras, he would not have so ably advocated his Vivarta doctrine in his Vākyapadīya.

Subhāṣitatriṣaṭi (300 popular verses on nīti, śṛṅgāra and vairāgya) often quoted by Abhinavagupta of 10th or 11th century—all these clearly indicate the versatility of his talents.

Bhartṛhari—a Śabda-monist.

In his Vākyapadīya, which is the only work we are here concerned with, Bhartṛhari clearly says that he is an out-and-out *Advaitin* (monist)¹⁷ who believes in the ultimate reality of the one Being, viz., śabda, from which this universe evolves. The first five verses¹⁸ sum up his views on śabda-monism and form a eloquent plea for the sphoṭa-doctrine. This śabda, the sonant substratum or the essence of speech which is equated with Brahman, is devoid of both beginning and end and manifests¹⁹ itself in this phenomenal world, Brahman being the efficient cause.

Śabdabrahman as one ultimate Reality.

What is known in the Vedas as the 'eka, advitiya Brahman' is ordinarily experienced by all in different forms and capacities; and this, Bhartṛhari says, is due to the various upādhis—limiting conditions imposed upon the Supreme Being. Hence the experiences representing

17. There is still a belief among the historians that Bhartṛhari was a Buddhist. But Bhartṛhari, the author of the Vākyapadīya was never a Buddhist, was always a believer in the apauruṣeyatva of the vedas and was ever a champion of the śabdabrahmavivartavāda.

18. Anādinidhanam brahma śabdatatvam yadaḥśaram

Vivartate arthabhāvena prakriyā jagato yataḥ
Ekameva yadāmnātaṁ bhinnam śaktivyapāśrayāt
apṛthaktvepi śabdebhyaḥ pṛthaktvenaiva vartate
Avyāhataḥ Kālā Kālaśaktimupāśritāḥ
janmādayo vikārāḥ ṣaṭ bhāvabhedasya yonayaḥ
Ekasya sarvabījasya yasya ceyamanekadhā
bhoktṛ-bhoktavyarūpeṇa bhogarūpeṇa ca sthitiḥ
Prāptiyupāyonukāraśca tasya vedo maharṣibhiḥ
ekopyanekavartmeva samāmnātaḥ pṛthak pṛthak

[V. Padīya Kāṇḍa I. Verses 1-5.]

19. Bhartṛhari belongs to the school of Vivartavādins who explain this universe as a vivarta of Brahman (i.e.,) a seeming manifestation having no separate reality behind it except that of Brahman, in contrast with the school of Parināmavādins who accept the transformation of Brahman into the separate existence or reality of, the world. e.p. śvarūpānupamardena anyathābhāvo vivartaḥ—yathā—rajjusarpe; svarūpopamardena anyathābhāvaḥ parināmaḥ—yathā—kṣīradadhni' Or more accurately, 'atātvikānyathābhāvaḥ Vivartaḥ'; tātvikānyathābhāvaḥ parināmaḥ.'

the six stages of the phenomenal world—birth, existence, transformation, growth, decay and destruction—present the characteristics of Kālaśakti, popularly known as *māyā* in the system of Vedānta philosophy. As the Advaitins say, this Kālaśakti possesses different and sometimes opposite properties like *satva* and *asatva* and consequently this universe appears differently as *bhoktr* (enjoyer), *bhoktavya* (enjoyable) and *bhoga* (enjoyment). It is again through this Kālaśakti or *māyā* that the Absolute Brahman manifests itself in the form of this manifold world. This Kālaśakti is again described as neither *sat* nor *asat*—*anirvacanāya*, i.e., it is neither separate from nor identical with the Absolute.

The Vedas as sources of the Realisation of Śabdabrahman.

To realise this Absolute Brahman man aspires and hence he studies the Vedas which glorify Its nature. It is because of this glorification that the sages have called them 'Brahman.' So they are the Brahman in miniature (*aṅukāra*). Bhartṛhari strongly asserts here that mankind cannot find better means than the Vedas to understand the nature of the ultimate Reality in this world. Man may rely on his reason, but, as Bhartṛhari says, it has not only not helped him but has even spoiled him, firstly because it has not given him the satisfactory solution for many vital puzzling problems of life like the existence of Īśvara and the origin and true nature of this world; and secondly because it leaves a residue of doubt in him, so much so that he is disinclined to accept the solution given in the Vedas for the above-mentioned problems. As true revelations, they are of super-normal authority, and as such, are invaluable records of truth. It is on this main ground that Bhartṛhari lays down the general principle that on questions of at least a super-normal (*alaukika*) character, āgama (Vedas, Smṛtis, etc., generally known as śāstra)²⁰ is the only authority, and tarka (reason or reasonable arguments chiefly in the form of syllogism) is unreliable, for²¹ however great might be a man's intellectual attainments, his well-thought-out syllogism will in no time be proved fallacious by a greater intellectual giant. He adds²² that a man who relies simply on his reason in *alaukika* matters is for ever doomed just

20. Compare the Bhagavadgītā—*tasmāt śāstram pramāṇam te kāryākāryavyavasthitau.*

21. 'Yatnenānumitopyarthaḥ kuśalaiḥ anumātr̥bhiḥ
abhiyuktataraiḥ anyaiḥ anyathaihopapādyate,
Kāṇḍa I. Verse 34.

22. 'Hastasparsādivāndhena viṣamepyabhidhāvātā
anumānapradhānena vinipāto na durlabhaḥ.'

as a blind man who only touches with his hands the slope of a huge precipice and advances further is doomed to death by an instantaneous fall.

The Vyākaraṇa Śāstra as the most important aṅga of the Vedas.

A proper study of the Vedas necessarily requires a proper study of the six vedāṅgas of which the Vyākaraṇa Śāstra is the most important.²³ Bhartṛhari, like Patañjali, believes in the doctrine of śadhu-śabda-pra-yoga begetting Dharma, cf. 'ekaḥ śabdaḥ suṣṭhu jñātaḥ samyak pra-yuktaḥ svarge loke kāmadhuk bhavati.' To use correctly a correct śabda involves great labour and investigation on the part of the speaker and this can be attained only by a systematic study of the vyākaraṇa śāstra. So patañjali says that the Vyākaraṇa Śāstra is the greatest among the six vedāṅgas, and a thorough study of it would certainly secure for the reader the fruits of the study of all the Vedas, cf. 'pradhānam ca ṣaṭsu aṅgeṣu vyākaraṇam, pradhāne ca kṛto yatnaḥ phalavān bhavati.' Bhartṛhari also concurs in Patañjali's view and explains the same more emphatically. He says²⁴ that the learned describe the Vyākaraṇa Śāstra as the nearest approach to Brahman, viz., Veda; as the highest of all austerities and as the first and foremost of the vedāṅgas.

It is again described²⁵ as the right or direct path which leads to the understanding of the true nature of speech, which is glorified in the Vedas²⁶ as the most brilliant light which illuminates this whole universe and whence this universe evolves. Again, it is called the door of apavarga—salvation and is a medicine to cure the diseases of language. Purest of all vidyās, it shines resplendent in every branch of knowledge.

23. The importance of the V. Śāstra lies in the fact that it *directly* helps the vedic student very much in the interpretation of the vedas by giving him correct derivation, accent and meaning,, etc., of the words and thus unlike the other aṅgas, produces a dṛṣṭaphala (an immediate fruit). This idea is explained by Bhartṛhari in his V. Padiya. Kāṇḍa I. Verse; "āsannaṁ brahmaṇaḥ tasya tapa-sāmuttamaṁ tapaḥ. Prathamam cchandasāmaṅgaṁ prāhuḥ vyākaraṇam budhāḥ." Compare the remarks made by Patañjali in the paspaśāhnika of his Mahābhāṣya, under—'rakṣohāgamalaghavasandehāḥ prayojanam'.

24. V. Padiya Kāṇḍa I. Verse 'āsannaṁ brahmaṇaḥ', etc.

25. ibid Kāṇḍa I. Verse 12. 'prāptarūpavibhāgāyāḥ yo vācaḥ paramo rasaḥ. yattatpunyatamaṁ jyotiḥ tasya mārgoyamāñjasah'.

26. "Trīṇi jyotiṃṣi trayāḥ prakāśāḥ yoyam jātavedāḥ yaśca puruṣeṣu āntaraḥ prakāśaḥ tatraitat sarvamupanibadham yāvat sthāsnu carīṣṇu ceti"—(See the commentary on Verse 12. Kāṇḍa Page 7 of the Benares Edition).

The Vyākaraṇa Śāstra as a Spiritual means of the realisation of Brahman.

Bhartṛhari even goes to the length of taking the Vyākaraṇa Śāstra as one of the chief *upāyas* for the realisation of Śabda Brahman. In this respect, Bhartṛhari's view is more philosophical and speculative than that of Patañjali. Vyākaraṇa is described²⁸ as the sole basis of all other vidyās; it is the first rung in the ladder of realisation, and as such the straight royal road for all who seek *mokṣa*. The vedic soul, free from error, sees His own form, viz., the Vedas which are described as originating from Him. Again in this Śāstra, various elements of speech are described in detail, which, serving as symbols for the remembrance of the *Ākāśabrahman*, appear to a yogin as the reflections of Brahman Himself. What is described as the one ultimate Being in all the Vedas—Rik, Yajus, Atharva and Sāma and what is also found manifested as manifold in the phenomenal world are both realised by him who understands the true purport of the Vedas; and this can be achieved only through the help of the Vyākaraṇa Śāstra.

The two kinds of Śabdas—Dhvani and Sphoṭa

According to the Śabda-monists, śabda is conceived in different ways:—(1) *dhvani* or *varṇa*, which is the audible sound manifesting the real śabda; and (2) *sphoṭa* or the real sound which is manifested by the *dhvani*.²⁹ Of these two śabdas only the latter is *vācaka*—that which conveys the ideas and it is *nitya*; the former perishes after its work of manifesting the eternal *sphoṭa śabda* and hence is *anitya*.

Artha, only a Vivarta of Sphoṭa

It is on the one hand accepted by all thinkers including Sanskrit grammarians that there is complete difference between *śabda* (*vācaka*) and *artha* (*vācya*), yet the metaphysicians among the Sanskrit grammarians of whom Bhartṛhari is the foremost, hold on the other, that there is *identity* between *śabda* and *artha*; in other words, *artha* is only a

27. taddvāramapavargasya vānmalānām cikitsitam.
pavitraṁ sarvavidyānām adhividyam prakāśate.
[V. Padiya. Kāṇḍa I. Verse 14.]

28. Verses 15—22 'yathārthajatayaḥ sarvāḥ param brahmādhigamyate' eulogise the study of the Vyākaraṇa Śāstra as the spiritual means of the realisation of the supreme Brahman.

29. The term *sphoṭa* is derived in two ways:—(1) *sphuṭyate* (*ahivyaayate*) *dhvanibhiḥ* *ayam* (*śabdaḥ*)—that which is manifested by dhvanis, namely, the *sphoṭa*; (2) *sphuṭati* (*arthaḥ*) *asmāt* (*abhivyaktasabdāt*)—that being manifested, conveys the ideas.

vivarta of *sphoṭa-śabda* when this latter is manifested and presented as possessing various properties. The relation between *śabda* and *artha*, generally known as *vācya-vācaka-bhāva* is *tādātmya*. This view is quite consistent with the theory of *śabdādvaita* which does not admit of the reality of anything other than the eternal *śabda*. And it also supports the idealistic theory of the grammarians that cognition is impossible without linguistic expression. cf. 'na sosti pratyayo loke yaḥ śabdānugamādrte.' (V. Padiya, Kāṇḍa I, verse 124.).

(To be continued.)

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Śri Mukundamālā
with
Tātparyadīpikā
of
Rāghavānanda.

—K. R. Pisharoti.

ननु 'प्रयाति परमं पारं विष्ण्वाख्यं पदमव्यय' मिति श्रुतेस्संसारार्णवपारभूतस्य विष्णोस्तत्पोतत्वकथनमयुक्तं इत्याशंकायां स्वगतभक्तिनौकाऽभेदाभिप्रायेण तथात्वकथनात् न दोष इत्याह ; यद्वा—भवजलधिगतानामित्यत्र कथं भवस्य जलधित्वं विषमसञ्चारित्वं वेति तत् समर्थयन्नाह ; अथवा—अतीतश्लोके मुकुन्द इति अहमिति चरणाविति शरणमिति च गृहीतरूपस्य तत्र तत्र प्रकाशितार्थस्य च मौकुन्दमन्त्रस्य मुख्यभक्तिफलस्य दुःखिजनमात्मा-धिकारित्वमाविष्कुर्वस्तद्व्याख्यानमुपसंहरति—

तृष्णातोये मदनपवनोद्धूतमोहोर्मिमाले

दारावर्त्ते तनयसहजग्राहसंघाकुले च ।

संसारारख्ये महति जलधौ मज्जतां नस्त्रिधामन् !

पादाम्भोजे वरद ! भवतो भक्तिनावं प्रसीद ॥ १० ॥

तृष्णेति । त्रीण्यकारोकारमकाराख्यानि जाग्रत्स्वप्नसुषुप्तिसंज्ञानि च स्थानान्यस्येति वा, ब्रह्मविष्णुरुद्राख्यानि विश्वतैजसप्राज्ञाख्यानि च तेजांस्यस्येति वा, त्रिधामा, तत्र संबोधनं त्रिधामन्निति । भोगमोक्षलक्षणं वरं ददातीति वरदः, तत्र संबोधनं वरदेति । सम्बोधनद्वयमादरार्थम् । संसारारख्ये महत्यपारे जलधौ मज्जतां नोऽस्माकं भवतः पादाम्भोजे, पाद एवाम्भोजं तस्मिन् विषये भक्तिनावं भक्तिर्निरतिशयप्रीतिरेव नौस्तां प्रसीदानुगृहाण । कथमस्य जलधित्वमित्यत उच्यते—तृष्णातोये—नानानदीजलागमेऽपि समुद्रजलवन्नानाविधकामावासावपि प्रागिवावस्थितत्वसाम्यात् बहुविस्तारसाम्याद्वा, तृष्णा भोगेच्छैव तोयं यस्मिन् तस्मिन् ; मदनपवनोद्धूतमोहोर्मिमाले मदनो भोगसाधनेषु सक्चन्दनाङ्गनादिषु अभिषङ्गस्स एव पवनो महावायुः, निश्चलस्यापि चलयितृत्वात्, तेनोद्धूताः कम्पिताः मोहा द्वैतभ्रमा एवोर्मिमालाः कल्लोलकुलानि यस्मिन् तस्मिन् ; दारावर्त्ते दाराः कलत्रभिवावर्तो यस्मिन् तस्मिन्, संसारार्णवपरिभ्रमावहत्वसाम्यात् ; तनयसहजग्राहसंघाकुले तनयाः सहजाश्च धनधान्यादिजीवनसर्वग्रहणहेतुत्वात् ग्राहाः तेषां संघेन प्रतिजन्म प्रकाशमानेनाकुले पूर्णे ; चकार उक्तसमुच्चये । अत्र मान्त्रिकश्रीमत्पदव्याख्या—त्रिधामन्निति, मुकुन्दपदव्याख्या वरदेति,

भक्त इत्यध्याहृत्य योजनोपदेशः । चरणावित्यंशप्रकाशनं पादाम्भोज इति । सत्त्वंपदार्थमात्रपरमार्थयोर्वैक्यार्थमूर्तेर्हरेश्चरणयोश्चिदानन्दयोः “ सदेव सोम्येदमग्र आसी ” दिति सन्मात्रात्मनैक्यावद्योतनायैकवचनम् । भक्तिनावं प्रसीदेति प्रपद्ये पदार्थप्रकटनम् । तदयमर्थः—हे श्रीमन् ! लक्ष्मीवल्लभ ! ऐश्वर्यादिषड्गुणपरिपूर्णेति वा स्वप्रकाशचिदात्मन्निति वा ब्रह्मविद्याप्रतिबिम्बितविग्रहेति वा सर्वाङ्गसुन्दरेति वा ब्रह्मल्लेन्द्रादिवन्दितपादपीठेति वा—मुकुन्द—मुक्तिप्रद चतुर्विधपुरुषार्थप्रदेति वा अखण्डानन्द-विग्रहेति वा, एवं सामानाधिकरण्येन चिदानन्दभेदोऽपास्तः, चित आनन्दादन्यत्वे तत्परतन्त्रत्वेन कदल्यादिवज्जडत्वापत्तेः, आनन्दस्य चितोऽन्यत्वेऽप्रकाशमानत्वेनाऽस्पृहणीयतापत्तेः उभयोरपि सतोऽन्यत्वेऽसत्त्वापत्तेश्चाखण्डार्थत्वं सच्चिदानन्दपदानामवगन्तव्यम् । अहं त्वच्चरणानुस्मरणादन्यदशेषं विसृज्यात्रैवासामार्थ्येऽपि नित्योद्यतस्संसारसर्पदष्टो मनुष्याभासो वा देहप्राणमनोबुद्ध्यहङ्कारशून्यद्रष्टृत्वा तद्विलक्षणश्चिदात्मा वा नित्यानित्यवस्तुविवेकेहामुत्रार्थफलभोगविरागशमदमादिसखमुमुक्षुत्वोपेतो वा त्वद्भजनाधिकारी तव सदात्मनः चरणौ शारदाम्भोरुहरमणीयौ पादौ चरणवत् समष्टिव्यष्टिदौ देहचेष्टाहेतुभूतौ चिदानन्दस्वलक्षणौ साक्षिशब्दलक्ष्यौ वा सदा जन्मनि जन्मनि नित्यं वाऽवस्थात्रयेऽपीति वा प्रपद्ये शरणं ब्रजामि स्मरामीति वाऽत्मत्वेनानुभवामीति वा, सदानन्दचिदात्मनो भक्तोऽन्यत्वे ममासत्त्वदुःखित्वजडत्वापरिहारादिति ॥

॥ १० ॥

एवं तावत् साक्षाद्बोधशिरस्कभगवद्भक्त्येकफलं मन्त्रं प्रमाणीकृत्य भक्तिः प्रार्थिता । अथ “ भवजलधिगतानां नराणां विष्णुपोतश्शरणं भवति ”त्यत्र संसारबन्धविध्वस्तये विष्णुभजनं कर्तव्यमित्युक्तम् ; तत्र कथं तत् कार्यमित्याकाङ्क्षायां भगवत्तत्त्वसाक्षाद्बोध-फलप्रधानं कार्णाष्टादशाक्षरं मन्त्रं प्रमाणीकृत्य प्रत्यक्चिन्मात्रतयेक्षिते तस्मिन् मनो-ल्यलक्षणं योगमुपदिशति—

हे लोकाश्मृणुत प्रसूतिमरणव्याधेभिरित्सामिमां

योगशास्त्रमुदाहरन्ति ह्यनयो यां याज्ञवल्क्यादयः ।

अन्तर्ज्योतिरमेयबेकममृतं कृष्णाख्यमापीयतां

तत् पीतं परब्रह्मैव वितनुते निर्वाणमात्यन्तिकम् ॥११॥

हे लोका इति । अत्र मूलप्रमाणत्वेनाभिमतस्य मन्त्रस्य सर्ववर्णाधिकारत्वं लोक-
शब्दाद्गम्यते । यथाहुः—

“ सर्वेषु वर्णेषु तथाश्रमेषु नारीषु नानाहयजन्मगेषु ।

दाता फलानामभिवाञ्छितानां द्रागेव गोपालकमन्त्र एषः ॥ ”

इति ।

हे लोकाः ! इमां मुख्यां सर्वसाधारणीं वा प्रत्यक्षसिद्धां वा प्रसूतिमर-
णव्याधेः जन्ममरणसंसाररोगस्य चिकित्सां परिहरणोपायं शृणुत आकर्ण्यध्वम् । नचा-
त्राविश्वासः कार्यः प्रामाणिकसम्मतत्वादित्याह योगज्ञाः योगशास्त्रज्ञाः मुनयो मन-
नशीलास्त्वयं योगमनुतिष्ठन्तश्च याज्ञवल्क्यादयो याज्ञवल्क्यसनत्कुमारनारदादयो यां
समुदाहरन्ति तात्पर्येणोपदिशन्ति । का सेत्याह—कृष्णाख्यममृतमापीयतामिति ।

“ कृषिर्भूवाचकशब्दो णश्चनिर्वृतिवाचकः ।

तयोरैक्यं परब्रह्म कृष्ण इत्यभिधीयते ॥ ”

“ तदेवानुभूतं सदमृतत्वं प्रयच्छती ” त्यमृतम् । तत् किं प्रत्यक्चितोऽन्यत् ?
किं वाऽन्यत् ? अन्यत्वे जडत्वापत्तिः, द्वितीये दुःखितापत्तिरित्यत उक्तम्—अन्तर्ज्योतिरिति ।
ब्रह्मादिमशकान्तप्राणिधीवृत्तिसाक्षिचैतन्यमित्यर्थः । अनेन मान्त्रिकगोविन्द-
पदार्थः प्रकाशितः । यथाहुः—“गोशब्दवाचकत्वाज्ज्ञानं तेनोपलभ्य इति (गो)विन्द इति ।”
मैनेतीत्यंभवे तृतीया, ज्ञानस्वरूपतयोपलभ्य इत्यर्थः । तदेवं प्रत्यक्चिन्मात्रपरमार्थत्वात्
कृष्णाख्यस्य ब्रह्मणो जडत्वं, नापि संसारित्वं, सुखदुःखादीनां दृश्यत्वेन दृक्सम्बन्धासम्भ-
वाद् बुद्धिधर्मत्वप्रतीतिरिति परिहारः सिद्धो भवति । अत्र ‘अन्तर्ज्योतिः’ कृष्णाख्यम-
मृतमिति सामानाधिकरण्यात् तदस्त्वैश्वरवादो जडात्मवादश्च ‘तत्त्वमसि’ वाक्यार्थ-
प्रकाशकप्रतिक्षिप्तः । आपीयतां अनुभूयतामित्येतत् । ननु ब्रह्मैव चेज्जीवः कुतस्सर्वे

देहिनः ‘अहं ब्रह्मास्मी’ति न पश्यन्तीत्यत उक्तं—अमेयमिति । प्रत्यक्षादिप्रमाणा-
विषयमित्यर्थः । “विज्ञातारमरे केन विजानीयात्, अदृश्यो नहि दृश्यते” इति श्रुतेः ।
प्रमाणमपि यमाश्रित्य प्रमाणं भवति तस्य प्रमाणतदधीनशरीरप्राणानिलसुखादिचेत्यनतिशय-
सदाभासमानस्य वेदनैकरूपस्य सर्वत्र प्रीतिभाजस्सिद्धावभिनवार्थप्रकाशरूपस्य प्रमाणस्य
तत्र नोपयोग इति न्यायाच्च । अप्रमेयत्वेऽपि स्वप्रकाशत्वान्नासिद्धिदोष इति ज्योतिः
पदेन सूचितम् । तथाच श्रुतिः—“अत्रायं पुरुषः स्वयंज्योतिर्भवत्यात्मैवास्य ज्योतिः”
रिति । ननु किमिदं स्वप्रकाशत्वं नाम ? अनन्याधीनप्रकाशत्वं चेत् न ; स्वपुष्पस्यापि
तथात्वात् । स्वस्य स्वयमेव प्रकाशत्वं चेत् । तदपि न, आत्माश्रयात् । प्रकाशान्तरमनपेक्ष्य
प्रकाशमानत्वं चेत् तदप्यसत्, सूर्यादीनामपि तथात्वात् । सजातीयविजातीयप्रकाशान्त-
रानपेक्षमेवस्व प्रकाशत्वं चेत् तदप्यसारं, ब्रह्मणश्शास्त्रीयज्ञानविषयत्वात् तदविषयत्वेऽ-
ध्यात्मशास्त्रानारम्भप्रसङ्गाच्च । अतोऽनुपपन्न एवायं पक्ष इति प्राप्तम् । अत्र ब्रूमः—
स्वप्रकाशत्वं नामाज्ञानविरोधित्वं तच्चान्ततो ज्ञानत्वमेव, ‘ज्ञानमज्ञानस्यैव निवर्तक’
मिति न्यायात् । ज्ञानादन्यस्य ज्ञेयत्वेन ज्ञातृत्वानुपपत्तेश्च । आत्माधीनसत्ताकं विज्ञानं
तदधीनस्फुरण आत्मेतिचेत् न । ज्ञानोदयात्पूर्वमस्फुरद्रूपस्यात्मनः शशविषाणकल्पत्वेन
ज्ञानकारणतानुपपत्तेरप्रकाशरूपादात्मन उत्पन्नत्वे ज्ञानस्य प्रकाशलक्षणायोगादात्मनो
विकारित्वेनाऽनित्यत्वावताराच्च । अत आत्मैव ज्ञानशब्दार्थो मुख्यः । “अथाय-
मात्माऽनन्तरोऽबाह्यः कृत्स्नः प्रज्ञानघन एव”ति श्रुतेः । तदाभासानुवेधादन्तः—
करणवृत्तिरपि घटसुखाद्याकारज्ञानमिति गीयते । “तमेव भान्तमनुभाति सर्वं
तस्य भासा सर्वमिदं विभाति” इति श्रवणात् । यत् पुनश्शास्त्रीयज्ञानविषय-
त्वान्न ब्रह्मणस्वप्रकाशत्वमिति तदसत् । वाक्यीयबुद्धिवृत्त्यभिव्यक्तश्चिदात्मा स्वाध्य-
स्तमशेषानर्थबीजमज्ञानं स्वयमेव तत्फलं भूत्वा हन्तीति परसमवेत्क्रियाफलशालित्व-
लक्षणकर्मत्वाभावात् । तथा च प्रयोगः—आत्मा स्वप्रकाशः आत्मत्वात् विप-
र्ययेण घटवदिति । तदेवं प्रत्यक्षाद्यविषयत्वात् कर्मत्वपरिहारेण शास्त्रस्यास्मिन् प्रवृ-
त्तिसम्भवाच्च ब्रह्मात्मनश्शास्त्रैकलभ्यतेति सर्वेषां तदप्रतीतिस्सम्भाव्यत इति सिद्धम् ।
ननु ब्रह्मणो ज्ञानात्मत्वे विज्ञानसन्तानत्वमापन्नमित्यत उक्तं एकमिति । ज्ञानस्य स्वतः

परतश्च जन्मविनाशभेदग्रहणासम्भवान्नित्यत्वमेकत्वञ्चाभ्युपेयम् । तथाहि न तावत् ज्ञानस्य स्वतो जन्मविनाशग्रहणं जन्मविनाशदशयोस्स्वयं सत्त्वापातात् स्वदृश्ययोस्तयोस्स्वात्मनि सत्त्वासम्भवाच्च । एवं स्वभेदस्यापि न स्वेनैव ग्रहणं, प्रागभिन्ने स्वात्मनि भेदग्रहणस्य भ्रान्तित्वात्, भिन्ने चेत् कुतः पूर्वं भेदस्सिद्ध इति वक्तव्यत्वाच्च, भेदस्य दृश्यत्वे दृक्सम्बन्धश्च दुर्घटः । न चान्यतो ज्ञातजन्मविनाशभेदानां ग्रहणं ज्ञानादन्यस्याज्ञानत्वेन ज्ञापकत्वानुपपत्तेः ज्ञानस्य स्वप्रकाशत्वेनान्यतस्तद्ग्रहणायोगात् धर्मिग्रहणेन विना धर्मग्रहणासम्भवाच्च । अतो जन्मादिविक्रियाविहीनमेकमेव ज्ञानमास्थेयमित्याशयः । यद्वा 'कृष्णारव्य' मिति ब्रह्मणस्सदानन्दत्वं 'अन्तर्ज्योति' रिति चित्त्वञ्चोक्तम्, तत्र सदानन्दचितां भेदे प्रसिद्धे ब्रह्मणोऽनेकरूपत्वं प्राप्तम्, तत्परिहारयोक्तं एकमिति । 'विज्ञानमानन्दं ब्रह्मे' त्यादिवाक्येषु 'प्रकृष्टप्रकाशश्चन्द्र' इत्यादिलौकिकवाक्येष्विवाखण्डार्थत्वं पदानाम् । तत्र ह्यस्मिन्ज्योतिर्मण्डले 'कश्चन्द्र' इति प्रश्नोत्तरत्वात् यथा प्रकृष्टप्रकाशशब्दाभ्यां चन्द्रप्रातिपदिकार्थमात्रं जहदजहलक्षणया बोध्यते तथेहापि 'किंलक्षणं ब्रह्मेति' जिज्ञासायां पठितत्वाद्विज्ञानानन्दपदाभ्यामेको ब्रह्मशब्दार्थ एव लक्ष्यते, ततस्सदानन्दचित्तामैक्यम् । न चात्र पदानां पर्यायतया सहप्रयोगानुपपत्तिः, असज्जडदुःखव्यावर्तनार्थत्वात् सच्चिदानन्दपदानामित्यभिप्रायः । अथवा कृष्णारव्यस्य ब्रह्मणोऽन्तर्ज्योतिष्टं वदता महदादिपृथिव्यन्तोऽहंकारादिदेहान्तश्च बाह्याध्यात्मिकप्रपञ्चो जडस्वभावत्वात्ततोऽन्यत्र सति निवेशित इति शङ्का स्यात्, तद्यपोहनायोक्तमेकमिति । सजातीयविजातीयस्वगतभेदशून्यमित्यर्थः । तदुक्तं श्रुत्या 'सदेव सोम्येदमग्र आसीदेकमेवाद्वितीय' मिति । पञ्चमवेदेन चानुगृहीतम्—

ज्ञानस्वरूपमत्यन्तनिर्मलः परमार्थतः ।

तदेवार्थस्वरूपेण भ्रान्तिदर्शनतः स्थितम् ॥

यदेतद्दृश्यते मूर्तेमेतज्ज्ञानात्मनस्तव ।

भ्रान्तिज्ञानेन पश्यन्ति जगद्रूपमयोनिज ! ॥

ज्ञानस्वरूपमखिलं जगदेतद्बुद्ध्यः ।

अर्थस्वरूपं पश्यन्तो भ्राम्यन्ते मोहसंश्लेषे ॥

ये तु ज्ञानविदग्धाश्चक्षुर्द्वचेतसस्तेऽखिलं जगत् ।
 ज्ञानात्मकं प्रपद्यन्ति तद्रूपं परमेश्वरम् ॥
 न्यग्रोधस्सुमहानरूपे यथा बीजे व्यवस्थितः ।
 संयमे विश्वमखिलं बीजभूते तथा त्वयि ॥
 ज्ञानमेव परं ब्रह्म ज्ञानं बन्धाय चेष्टते ।
 ज्ञानात्मकमिदं विश्वं न ज्ञानाद्विद्यते परम् ॥
 यद्विदं दृश्यते किञ्चित् दर्शनात्तत्र भिद्यते ।
 दर्शनं द्रष्टृतो नान्यत् द्रष्टैव हि तत्रो जगत् ॥

इत्यादि ।

यत् पुनर्जडस्वभावस्य विश्वस्य ज्ञानात्मनो ब्रह्मणोऽनन्यत्वञ्च संभवतीति ;
 तद्वत्सत्, जडस्वभावत्वे सिद्धे ज्ञानादन्यत्वसिद्धिस्तत्सिद्धौ च जडस्वभावत्वसिद्धिरिति
 अन्योन्याश्रयात् । ननु प्रत्यक्षत एव घटसुखादेर्जाड्यमवसीयत इति चेत् न, मनुष्योऽहं
 कृशोऽहं स्थूलोऽहमित्यात्मनोऽपि प्रत्यक्षेण जाड्यप्रतीतेः । नन्विदं चित्ति देहतद्रमार्थास-
 रूपा भ्रान्तिरेव न प्रमाणज्ञानमिति चेत् न ; घटं पश्यामि सुखमनुभवामीत्यपि चित्ति घट-
 सुखाकारारोपरूपा भ्रान्तिर्न प्रमाणमित्यभ्युपगमात् । सुखात् घटसुखादीनां देहमाणादीनाञ्च
 वस्तुतश्चिन्मात्रत्वंमायैव केवलमचिद्रूपता विपर्यये सत्तः प्रकटश्रमानादात्मनोऽत्यग्रेणास्त्वा-
 प्रकाशत्वबोत्परिहारादिति सिद्धम् । अद्वा कृष्णस्थान्तरात्मत्वे जीवानामनेकत्वादन्त-
 मेदत्वं प्राप्तमित्यत उक्तमेकमिति । तथाच श्रुतिः—

“ एको देवस्सर्वभूतेषु गूढः
 सर्वव्यापी सर्वभूतान्तरात्मा । ” इति ॥

स्मृतिश्च—

एक एव तु भूतात्मा भूते भूते व्यवस्थितः ।
 एकधा बहुधा चैव दृश्यते जरुचन्द्रकत् ॥ इति ॥

पुराणोपनिषच्च—

शुद्धः संलक्ष्यते भ्रान्त्या गुणवानिव योऽगुणः ।

तमात्मरूपिणंदेवं नतास्मः पुरुषोत्तमम् ॥

आत्मा शुद्धोऽक्षरश्शान्तो निर्गुणः प्राऽकृतोपरः ।

प्रवृद्धयपचयौ नास्य ह्येकस्याखिलवस्तुषु ॥

सितनीलादिभेदेन यथैकंदृश्यते नभः ।

भ्रान्तदृष्टिभिरात्मापि तथैकस्स पृथक् पृथक् ॥

इत्यादि ।

स्यादेतत् । प्रतिक्षेत्रं क्षेत्रज्ञभेदाभावे कथमेकस्मिन्मुक्ते सर्वे मुक्ताः एकस्मिन् बद्धे सर्वे बद्धाः, एकस्मिन्जाते मृते वा सर्वे जाता मृता वा, दुःखिन्येकस्मिन् सर्वे दुःखिनस्सुखिनि सर्वे सुखिनो वा न स्युरिति, तदेतदसमीक्षिताभिधानम् । स्वरूपभेदाभावेऽप्युपाधिभेदादेव बन्धमोक्षादिन्यवस्थोपपत्तेन्तेः । पर्यथैकस्मिन्देहे सर्वेन्द्रियाधिष्ठातुरात्मन एकत्वेऽपि नयनोपहितस्यैवरूपज्ञत्वं श्रोत्रोपहितस्यैव शब्दज्ञत्वमित्यादिव्यवस्था तथा सर्वभूतेष्वात्मन एकत्वेऽपि शुक्लदेहोपहितस्य मुक्तत्वं पशुदेहोपहितस्य बद्धत्वमित्यादिव्यवस्था किंनाभ्युपेयते । किञ्च सिद्ध आत्मभेद एकस्मिन् सुखिन्यन्यो दुःखी दृश्यत इत्यादि व्यवस्थोपन्यासः सिद्धायाञ्च व्यवस्थायां भेद इत्यन्योन्याश्रयदोषः कथं प्रक्षालनीयः । तत्सिद्धमेतत्—विमत आत्मभेदो मिथ्या भेदत्वाच्चन्द्रभेदवत् । यद्वा, उपाधिभन्तरेणानुपलभ्यमानत्वाद्ब्रह्मभेदवदिति । अपि च, योऽसौ भेदस्स किञ्जडस्वभावः, उताजडस्वभावः । आद्ये किं भेदिनस्स्वरूपं किं वा तद्धर्मः, स्वरूपञ्चेत् तत्प्रतीतेः प्रतियोगिसव्यपेक्षता न स्यात्, स्वरूपञ्च तदन्यापेक्षञ्चेति व्याघातात् । न भेदश्चात्मतत्वं स्याज्जडजडयोरेकरूपत्वानुपपत्तेः । धर्मश्चेत् भेदभेदिभेदान्तरानुपपत्तिरत्रापि तुल्या, अथाजडस्वभावोऽसौ तत्रापि किं सर्ववस्तुष्वेक उतानेकः । अनेकश्चेत् भेदानां परस्परभेदं विना नानेकत्वमिति भेदान्तरशतसहस्रपरम्परापेक्षायामनवस्था, एकः सर्ववस्तुनगतोऽजडस्वभावश्च यदि भेदस्तर्ह्यस्मैव भेदशब्दार्थस्स्यात् तत्कुतोऽस्य भेदाशङ्का । अस्मिन् पक्षे सर्ववस्तुनामेकभेदभक्तत्वेनानेकताहानिश्च वाच्या । तदेवं क्षेत्रज्ञभेदाभावात्तत्स्वरूपभूतं ब्रह्मकमेवेति सिद्धम् । अथवा प्रसिद्धामृतप्रहाणेन किमिति कृष्णाख्यस्यामृतस्य पानविधिरित्यत उक्तमेकमिति । प्रधानमित्यर्थः । जनिम-

त्वाज्जडत्वात् परिच्छिन्नत्वादूरस्थत्वाच्च प्रसिद्धममृतमप्रधानम् । ब्रह्मामृतञ्चाज्जडत्वान्नि-
त्यत्वाद्यापकत्वात् सर्वान्तःस्थत्वाच्च प्रधानमित्याशयः । ननु व्याधिशान्तिरौषध-
सेवनेनैव भवेत् कुतोऽमृतपानविधानमित्यत आह—तदिति । यद्वा कुतोस्यामृतत्व-
मित्यत आह—तदिति । यदेतत् कृष्णारूयममृतं विद्यते परमौषधं परमं सर्वो-
त्कृष्टमौषधं अतः पीतमात्मनानुभूतं सत् आत्यन्तिकं नित्यपुरुषार्थरूपं निर्वाणं मोक्ष-
सुखं वितनुते, 'आत्मनि विज्ञाते सर्वमिदं विज्ञातं भवत्येतावदरे खल्वमृतत्व' मिति श्रुतेः ।

“ तावदार्तिस्तथा वाञ्छा तावन्मोहस्तथा सुखम् ।

यावन्न याति शरणं त्वामशेषाधनाशनम् ॥

तावद्रागादयस्तेनास्तावत् कारागृहं गृहम् ।

तावन्मोहांघ्रियुगलो (?) यावत् कृष्ण नते जनाः ॥ (?)

एकोपि कृष्णे सुकृतः प्रणामो

दशाश्वमेधावमृथेन तुल्यः ।

दशाश्वमेधी पुनरेति जन्म

कृष्णप्रणामी न पुनर्भावाय ॥

प्राजापत्यं ब्राह्मणानां स्मृतं स्थानं क्रियावताम् ।

स्थानमैन्द्रं क्षत्रियाणां संग्रामेष्वनिवर्तिनाम् ॥

वैश्यानां मारुतं स्थानं स्वधर्ममनुवर्तिताम् ।

गान्धर्वं शूद्रजातीनां परिचर्यानुवर्तिनाम् ॥

अष्टाशीतिसहस्राणि यतीनामूर्ध्वरेतसाम् ।

स्मृतंतेषान्तु यत् स्थानं तदेव गुरुवासिनाम् ॥

सप्तर्षीणाञ्च यत् स्थानं स्मृतं तद्वै वनौकसाम् ।

प्राजापत्यं गृहस्थानां ब्राह्मं सन्यासिनां स्मृतम् ॥

योगिनाममृतं स्थानं स्वधर्ममनुवर्तिनाम् ।

एकान्तिनस्सदा ब्रह्मध्यायिनो योगिनो हि ये ॥

तेषां तत्परमं स्थानं यच्च पश्यन्ति सूरयः ।

गत्वा गत्वा निर्वर्तन्ते चन्द्रसूर्यादयो ग्रहाः ।

अद्यापि न निर्वर्तन्ते द्वादशाक्षरचिन्तकाः ॥ ”

इत्यादिपञ्चमवेदवचनाच्च । “ आत्यन्तिकं निर्वाण ” मिति विशेषोक्तिर्मोक्षाभा-
सभेदव्युदसनार्थम् । इह लोकायतिका देहात्मवादिनो मरणमेव मोक्षमाचक्षते तस्यास्य
स्वदर्शनप्राप्तिरूपत्वान्मोक्षाभासत्वं सुप्रसिद्धम् । आर्हतास्सततोर्वगमनरूपमिति रटन्ति,
एतदपि सतताधोगतिवत् प्रयासमयत्वादाभासतांतातिवर्तते । बौद्धेषु क्षणिकवादिनो
विज्ञानवादिनश्च विशुद्धविज्ञानसन्तानोदयं मोक्षमाहुः, तदप्यसत् । प्रकाशैकरूपे ज्ञाने
विषयोपभोगमन्तरेण भेदानिर्वाहात् विशुद्धविज्ञानसन्तानासिद्धेर्मुमुक्षुसन्तानस्य नष्टत्वेनाऽ-
कृताभ्यागमकृतविप्रणाशापत्तेश्च । यः पुनः बोधिसत्वाग्रणीः माध्यमिकस्स शून्यतावाप्तिं
मुक्तिमिच्छति तत्पक्षस्सर्वशून्यताया द्रष्टृसत्वासत्त्वयोरसिद्धेस्त्याज्यः । तार्किकास्तु आत्मनो
बुद्ध्यादिनवगुणोच्छिन्ति मुक्तिमास्थिषत, तन्मोक्षदशायामीश्वरवज्जीवानामिच्छाज्ञानप्रयत्न-
वत्वसम्भवात् विपर्यये पाषणकल्पत्वाच्च नाङ्गीकार्यम् । सांख्योः प्रकृतिपुरुषविवेकंमोक्षम-
नुस्मरन्ति । तत् मुक्तस्य प्रकृतिदर्शनादर्शनयोर्न युज्यते । दर्शने तत्कृतसंसारदर्शनानिवृत्तेः
अदर्शने प्रकृतेः पुंसो विवेकज्ञानासिद्धेश्च, न खलु धर्मिणोऽदर्शने धर्मस्य विवेकग्रहणं
संभवतीति । कर्ममीमांसकाः काम्यप्रतिषिद्धेतरकर्मसाध्यामात्मनः स्वरूपावस्थानलक्षणां
मुक्तिमुपदिशन्ति । तत्कृतकत्वेनानित्यत्वानुमानात् प्राक्स्वरूपावस्थाने साध्यत्वाभावादन-
वस्थाने स्वरूपत्वाभावाच्च न शोभनम् । पाशुपताः पाञ्चरात्रकाश्च परदेवतासालोक्यादि-
लक्षणात् ब्रह्मविष्ण्वीश्वरसदाशिवभेदेन वासुदेवसंकर्षणप्रद्युम्नानिरुद्धभेदेन च स्थितायाः
परदेवतायाः श्रवणकीर्तनध्यानपूजनोपजनिततत्पसादलभ्यामुक्तिं मन्यन्ते । तदपि
सालोक्यादीनां कर्मसाध्यत्वेन भेददर्शनमयत्वेन च नश्वरत्वसंभयत्वानुमानादयुक्तम् ।
अतः आत्माविद्यास्तमय एव साक्षान्मोक्षः, स च तद्विधैकसाध्यत्वान्नित्य इति
स्थितम् ॥

अत्रायमुपदेशसारसंग्रहः— अहङ्कारादिदेहपर्यन्तस्य महदाद्यवन्यन्तस्य च व्यष्टि-
मष्ट्यात्मकस्य प्रपञ्चस्य बीजस्य जाग्रत्त्वप्रसुषुप्त्यवस्थाभेदैर्विराड्द्विरण्यगर्भव्याकृताकार

भेदैस्साक्षिणि भेदासंभवात् बीजभूताज्ञानरजस्सत्त्वतमोगुणभेदादेव ब्रह्मविष्णुरुद्रभेदाद्विश्व-
तैजसप्राज्ञभेदाच्च भिन्नसृष्टिस्थितिसंसारहेतुदुःखसुखमोहपात्रं वा परमेश्वरो जीवश्च सर्वक्षेत्र-
गतोऽहमेव एक ' सर्वव्यापी सर्वभूतान्तरात्मा च देव ' इति श्रवणात् ' आत्मैवेदं सर्वं ब्रह्मै-
वेदं सर्वं 'मिति श्रुत्यन्तरादिति कार्यकारणाभेदन्यायात् सदानन्दचिद्धनो ब्रह्म अहमेव तत्त्वं-
मतोऽन्यत् किञ्चिन्नास्ति, अस्ति चेदपि गन्धर्वनगरकल्पं वाचारंभणं त्रिकारो नामधेयंमृ-
त्तिकेत्येवं बुभुत्सुना मया मदन्वेषणमेव कार्यमिति निश्चित्य शब्दादिभ्यश्शनैर्मन आकृष्य
प्रत्यङ्मुखतान्नीत्वाऽसज्जडदुःखपरिच्छिन्नद्वैतप्रपञ्चभूमाधिष्ठानत्वान्यथानुपपत्तिसिद्धे सच्चिदा-
नन्दानन्ताद्वितीयवपुषि तुरीये ब्रह्मात्मनि चिरं विहृत्य चरितार्थो भवेदिति । लक्ष्मप्रयोगान्न
कालान्तरे मुक्तिः किन्तु तदैवेति सूचितम् । तथा च श्रुतिः—

ब्रह्म वेद ब्रह्मैव भवति' इति ॥ ११ ॥

नन्वियं चिकित्सा विषयानाकृष्टचित्तैः कैश्चिदेव पुंभिः कर्तुं शक्यते तदन्येषां मुमु-
क्षूणां का चिकित्सेत्याह—

हे मर्त्याः ! परमं हितं शृणुत वो वक्ष्यामि संक्षेपतः

संसारार्णवमापदूर्मिबहुलं सम्यक् प्रविश्य स्थिताः ।

नानाज्ञानमपास्य चेतसि 'नमो नारायणाये' त्यमुं

मन्त्रं सप्रणवं प्रणामसहितं प्रावर्तयध्वं मुहुः ॥

॥ १२ ॥

हे मर्त्या इति । अस्य मन्त्रस्यापि साधारण्यं मर्त्यशब्दात् व्यञ्जितम् । हे मर्त्याः
आपदूर्मिबहुलं विविधदुःखकलोलमालाकुलं संसारार्णवं जन्मादिसंसारसमुद्रं सम्यक्
नियमेन प्रविश्य स्थिताः एतेषां वः परमं सर्वोत्कृष्टं हितं तरणोपायं शृणुत । ननु
पूर्वश्लोक एवोपदिष्टं तदित्यत उक्तम्—वक्ष्यामि संक्षेपत इति । अल्पप्रमाणत्वेनोपदे-
क्ष्यामीत्यर्थः । चेतसि स्थितं नानाज्ञानं देवतागुरुमन्त्रात्मभेदभ्रान्तिमपास्य सप्रणवं
प्रणवादिकं नमो नारायणायेत्यमुं परिमिताक्षरं वेदप्रसिद्धं वा, ' ओमित्येकाक्षरं नम

इति द्वे अक्षरे नारायणाय इति पञ्चाक्षराणि, एतद्वै नारायणस्याष्टाक्षरं पदमिति श्रुतेः, मन्त्रं मननकर्तृताशीलं शब्दरूपं प्रणामपूर्वकं मुहुः भूयो भूयः अष्टोत्तरसहस्रसंख्यं द्वादशसहस्रसंख्यं वा प्रावर्तयध्वं नियमेनावर्तयध्वम् । यद्वा प्रकर्षेण ‘अर्कौघाभं किरीटान्वितमकरलसत्कुण्डल’ मित्युक्तध्यानमनुसृत्यावर्तयध्वम् जपध्वम् । यद्वा प्रकर्षेण मानसोच्चोपांशुभेदेनावर्तयध्वम् । तदुक्तं—

“यदुच्चनीचस्वरितैश्शब्दैस्स्पष्टपदाक्षरैः ।
मन्त्रमुच्चारयेद्वाचा जपयज्ञस्स वाचिकः ॥
शनैरुच्चारयेन्मन्त्रं किञ्चिदोष्ठौ प्रचालयेत् ।
ईषच्छब्दं स्वयं विद्यादुपांशुस्स जपः स्मृतः ॥
ध्यानं यदक्षरश्रेण्या वर्णाद्वर्णं पदात्पदम् ।
शब्दार्थचिन्तनाभ्यासस्स उक्तो मानसो जपः ॥”

इति ॥ ॥ १२ ॥

कुतोऽस्य मन्त्रस्य संसारार्णवे मग्नानां परमहितत्वमित्यत्राह —

नारायणाय नम इत्ययमेव सद्य-
स्संसारघोरविषसंहरणाय मन्त्रः ।
शृण्वन्तु भव्यमतयो यतयोऽस्तरागा
उच्चैस्तरामुपदिशाम्यहमूर्ध्वबाहुः ॥

॥ १३ ॥

नारायणेति । एवकारो भिन्नक्रमः । नारायणाय नम इत्ययं मन्त्रः, सद्यः सहायान्तरमनपेक्ष्य संसारघोरविषसंहरणाय संसारसर्पस्य यत् घोरं असह्यं विषं तस्य संहरणाय भवत्येव । “यो हरेर्नारायणस्याष्टाक्षरं पदमध्येत्यनपब्रुवस्सर्वमायुरेति विन्दते प्राजापत्यं रायस्पोषं गोपत्यन्ततोऽमृतत्वमश्नुते” इति श्रुतेः ।

“ कितस्य बहुभिर्मन्त्रैः कितस्य बहुभिर्व्रतैः ।

नमो नारायणायेति मन्त्रस्सर्वार्थसाधकः ॥ ”

इति स्मृतेश्च । अथवा —

“ तेनाधीतं श्रुतं सर्वं तेन सर्वमनुष्ठितम् ।

येनोनमदिशवायेति मन्त्राभ्यासस्थिरीकृतः ॥

कोटयो ब्रह्महत्यानामगम्यागमकोटयः ।

सद्यः प्रलयमायान्ति महादेवेति कीर्तनात् ॥ ”

इत्यादिश्रवणात् पञ्चाक्षरादिमन्त्राभ्यासादपि मुक्तिर्गम्यते, तत्कुतो विशेषोपदेश इत्यत्राह—नारायणायेति । नारायण इत्ययं मन्त्र एव सद्यः कालान्तरं देशान्तरं देहान्तरञ्चानपेक्ष्य संसारघोरविषसंहरणाय भवति शुद्धसत्त्वमूर्तिनिष्ठत्वात् ; मन्त्रान्तराणि तु तामसराजससात्त्विकत्रिगुणमूर्तिनिष्ठत्वात् सत्त्वमूर्तिभक्तिव्यवधानेनैव मुक्तये कल्पन्त इति कालादिव्यवहितफलानीत्याशयः । यथोक्तम्—

पार्थिवादारुणो धूमस्तस्मादभिस्तमोमयः ।

तमसस्तु रजस्तस्मात् सत्त्वं यत् ब्रह्मदर्शनम् ॥

स्वधर्मनिष्ठः शतजन्मभिः पुमान्

विरिञ्चतामेति ततः परं हि मा ।

अव्याकृतं भागवतोऽथ वैष्णवं ॥

इति ॥

पदं.....मेजिरे मुनयोऽथाग्ने भगवन्तमधोक्षजम् ।

सत्त्वं विशुद्धं क्षेमाय कल्पन्ते ये नु तानिह ॥ ”

इति चान्यत्र पञ्चमवेदेनाभ्यधायि । कस्माद्विष्णुभजनादेव सद्योमुक्तिरिति, तन्मन्त्रस्योपदेश उपपद्यत इति ; ये पुनः शुद्धसत्त्वमूर्तिः परमशिव एव, विष्णुस्तु तमोमूर्तिः तमोरजोमिश्रसत्त्वमूर्तिर्वैत्यङ्गीकुर्वन्ति, तेषां परमशिव एवाष्टार्णमन्त्रदेवता न विष्णुरित्यविरोधः ।

नारो नरसमूहस्यादयनं विम्बसंज्ञितम् ।

तस्य तद्भावनयोगात्तेन नारायणः स्मृतः ॥

इति स्मरणात् । सतारेण पञ्चाक्षरेणापि स एव चेदुपदिश्यते तर्हि सोऽपि मन्त्रस्सद्योमुक्तये भविष्यति । अत एवोक्तम् ।

यद्यक्षरं नाम गिरेरिति नृणां सकृत्प्रसंगादघमाशु हन्ति तत् ।

पवित्रकीर्तितमलङ्घ्यशासनं भवानहो द्वेष्टि शिवं शिवेतरः ॥

इति ।

किञ्च यद्ययमेव मन्त्रः सद्योमुक्तिहेतुरिति नियमस्तर्हि—“ ओमित्येवं ध्या-
यथ आत्मानमन्या वाचो विमुञ्चथ, अमृतस्यैष सेतुः । ”

“ ओमित्येकाक्षरं ब्रह्म व्याहरन्मामनुस्मरन् ।

यः प्रयाति स मद्भावं याति नास्त्यत्र संशयः ॥ ”

इत्यादि श्रुतिस्मृतिवचांसि बाध्येरन् । द्वादशार्णाष्टादशार्णनृसिंहादिमन्त्राणां मूर्तिहेतुत्वसंकथापि साध्वी दूषिता स्यादित्यलमतिप्रलापेन । तदेवं शुद्धसत्त्वमूर्तिनिष्ठत्वा-
दयमष्टार्णो मन्त्रस्सद्योमुक्तये भवतीत्येव तात्पर्यम् । न पुनर्मन्त्रान्तराणां तन्निष्ठानामपि सद्योमुक्तिहेतुत्वं नास्तीति । त्रिगुणमूर्तिनिष्ठानां सत्त्वाद्येकैकगुणमूर्तिनिष्ठानाञ्च मन्त्राणां नास्मिन्नेव जन्मनि मुक्तिजनकतेति तेभ्योऽस्य वैशिष्ट्यमवधेयम् । तदेतदभिसन्धायानु-
गृहीतं हृषीकेशेन “ वासुदेवस्सर्वमिति स महात्मा सुदुर्लभः ” “ कामैस्तैस्तैर्हृतज्ञानाः
प्रपद्यन्तेऽन्यदेवताः ” इति ।

ओङ्कारस्सोऽहमर्थो न इति निषेधात्मको मो [यम ?] मर्थो ।

नासत्ता रा चिदर्थो य इति पुनरनन्तात्मको णा सुखार्थः ।

योऽद्वैतार्थस्तदुत्थामतिरिह गदिता सोऽस्मि नासौ प्रपञ्चः ।

सत्ता सत्यं स्वसंविज्ञिरवधिरमलानन्दरूपोऽद्वयोऽहम् ॥

अस्मिन्मन्त्रे के मुख्याधिकारिण इत्यत्राह शृण्वन्त्विति । तमिममुपदेशं यतय-
श्शृण्वन्तु । के ते भव्यमतयः शुद्धबुद्धयः ते, पि के अस्तरागाः रागद्वेषशून्या
इत्यर्थः । अहं प्रत्यक्षीकृततत्सामर्थ्यं उच्चैस्तरान्निश्शङ्कमेनदुपदिशामि । तथाचोक्तम्—

“ सत्यं सत्यं पुनस्सत्यं मुद्धृत्य भुजमुच्यते ।

वेदशास्त्रात्परं नास्ति न दैवं केशवात् परम् ॥

आलोढ्य सर्वशास्त्राणि विचार्य च पुनः पुनः ।

इदमेकं सुनिष्पन्नं ध्येयो नारायणस्सदा ” ॥ इति ॥ ॥ १३ ॥

यतयः शृण्वन्त्वित्यम् । तत्र रागिणामत्राधिकारो नास्तीति शङ्का स्यात्, तथाच
पूर्वापरविरोधः ‘ हे मर्त्याः परमं हितं शृणुत वो वक्ष्यामि ’ इत्यारब्धत्वात्, तत्परिहा-
रायाह —

आर्ताः विषण्णा शिथिलाश्च भीता घोरेषु च व्याधिषु वर्तमानाः ।

संकीर्त्य नारायणशब्दमात्रं विमुक्तदुःखाः सुखिनो भवन्ति ॥ १४ ॥

आर्ता इति । न केवलं विरागिणोऽनेन संसारान्मुच्यन्ते, यावदार्तादयो रागिणश्च
शोकार्णवन्तरन्तीति चार्थः । अपरश्चकार आर्ताद्यन्योन्यसमुच्चयार्थः । आर्ताः प्रिया-
वियोगादिदुःखिनः विषण्णाः दरिद्राः शिथिलाः करचरणनयनाद्यङ्गहीनाः स्वपदच्युताः
वा भीताश्चोरेव्याघ्रादिभ्यो भूतपिशाचादिभ्यो वा बिभ्यतः घोरेषु दुष्परिहारेषु कुष्ठभ-
गन्दरराजयक्षमादिषु व्याधिषु वर्तमानाश्च ‘नारायणे’ति चतुरक्षरो यश्शब्दः श्रीभगव-
दात्मैक्यप्रमाणभूतं महावाक्यं भगवन्नामेति प्रसिद्धं एतावन्मात्रं नतारनतियुतन्तेषां
सर्वेषामनेन सहैकार्थत्वेन सहप्रयोगानवश्यंभावात् । संकीर्त्य सखरनिरन्तरमभ्यस्य
विमुक्तदुःखास्सम्यक् परिहृततत्तद्दुःखाः सुखिनः प्राप्तपूर्व [सुखाश्च] भोगसुखाश्च
भवन्ति । अत्र तत्त्वाप्रत्ययेन पौर्वापर्यार्थत्वेन हेतुहेतुमद्भावं प्रकाशयता संकीर्तनस्य
सुखदुःखप्राप्तिपरिहाररूपस्य फलस्य च भिन्नकालत्वं व्यञ्जितम् । लटा फलस्याचिरेण

सिद्धिः सूचिता । तेन श्रीभगवन्नामसङ्कीर्तनस्य दृष्टफलत्वात् तत्प्रामाण्येन वेदितव्यं सद्भिरिति ध्वनितम् । तथा च भगवद्वचनम्—

“चतुर्विधा भजन्ते मां जनास्सुकृतिनोऽर्जुन ।
आर्तौ जिज्ञासुरर्थार्थी ज्ञानी च भरतर्षभ ॥
तेषां ज्ञानी नित्ययुक्त एकभक्तिर्विशिष्यते ॥” इति ।

यदा श्रीमदष्टार्णमन्त्रैकदेशस्यापीदृशी दशा, तदा समस्तस्य तस्य चतुर्विधपुरुषार्थ-
साधनत्वे किंनाम विचारणीयमिति श्लोकार्थः ॥ १४ ॥

अथाष्टार्णमभ्यासिभिरनुष्ठेये चरणोपासनकर्मण्यंशभूतमन्त्रमाविश्विकीर्षुस्तदाद्यं
श्रीमत्पदमाददानः पुलकसादीनामप्यनेन मुक्तिमाह—

श्रीमन्नाम प्रोच्य नारायणारूढं के न प्राप्ता वाञ्छितान् पापिनोऽपि ।
हा नः पूर्वा वाक् प्रवृत्ता न तस्मिन् येन प्राप्तं गर्भवासादिदुःखम् ॥ १५ ॥

श्रीमन्नामेति । नारायणारूढं श्रीमन्नाम सुमंगलं नाम प्रोच्य सङ्कीर्त्य पापि-
नः पापयोनयोऽपि वाञ्छितान् के न प्राप्ताः । यथोक्तम्—

“किरातहृणान्प्रपुलिन्दपुल्कसाः
आभीरकङ्का यवनाः कषादयः [?] ।
येऽन्ये च पापा यदपाश्रयाश्रया-
श्शुद्धयन्ति तस्मै प्रभविष्णवे नमः ॥”

इति ।

यतः पापिनामपि सङ्कीर्तनादशेषपुरुषार्थावाप्तिरत एतदनुमीयत इत्याह—
हा न इति । हा इति विषादे । नोऽस्माकं तस्मिन्नास्मि वाक् पूर्वन प्रवृत्ता । कुतः,
येन यस्मात् गर्भवासादिदुःखमस्मिञ्जन्मनि प्राप्तं अस्माभिः । यदि प्राचीनजन्मनि
श्रीभगवन्नामसङ्कीर्तनञ्चक्रेम, न तर्हि संप्रति संसरेम । प्रागेवमुक्तत्वादित्यर्थः ॥ १५ ॥

अत्र ‘केन प्राप्तं गर्भवासादिदुःख’मिति केचित् पठन्ति । तत्र यदि तस्मिन्
वाक् पूर्वं प्रवृत्ता, तर्हि केन हेतुनाऽस्मिञ्जन्मनि गर्भवासादि दुःखं प्राप्तमिति योजनीयम् ॥

अथाष्टाक्षरमन्त्रनिष्ठैः कायिकवाचिकमानसव्यापाराणां भगवति योजनञ्च कार्यमित्याह ।

नमामि नारायणपादपङ्कजं
करोमि नारायणपूजनं सदा ।
वदामि नारायणनाम निर्मलं
स्मरामि नारायणतत्त्वमव्ययम् ॥ १६ ॥

नमामीति । सदेति सर्वत्र संबद्धचते । नारायणपादपङ्कजं सदा नमामि प्रह्वीभवामि । अनेन नारायणचरणौ शरणमहं प्रपद्ये इति मन्त्रशेष आविष्कृतः । नमस्कारस्य कायिकवाचिकमानसभेदेन त्रैविध्यात् कायादिसाधारणव्यापारार्पणञ्च दर्शितम् । सदा नारायणपूजनं करोमीति कायव्यापारस्यैवार्पणं, सदा निर्मलं नारायणनाम वदामीति वाग्व्यापारस्य, अव्ययं अविकारं, नारायणतत्त्वं नारायणस्य परमात्मनस्तत्त्वं सदानन्दचिद्व्ययं स्वरूपं सदा स्मरामीति मानसव्यापारस्य, भगवतो वासुदेवस्य शासनानतिवर्तित्वात् कायवाङ्मनोभिः शुभमशुभं वा यद्यत्कर्माऽहं करोमि तत्तत्सर्वन्त्वत्मीतये भूयादिति दृढसंकल्पः प्रणामादिकं विवक्षितमिति सदाशब्दात् गम्यते । सर्वदा नमस्कारादेरशक्यक्रियत्वात् । पुराणोपनिषच्च—

कायेन वाचा मनसेन्द्रियैर्वा
बुद्ध्यात्मना वाऽनुसृतस्वभावः ।
करोमि यद्यत्सकलं परस्मै
नारायणायेति समर्पयामि ॥ इति ॥

॥ १६ ॥

यदुक्तम्—

“ नारायणाय नम इत्ययमेव सद्यः
संसारघोरविषसंहरणाय मन्त्रः ” ।

इति । तत्र परतत्त्वनिष्ठानामपि मन्त्रान्तराणां सद्योमुक्तिफलतेति प्रतीयात्, तन्निवारयन् ध्यानयजनमननेभ्यस्सङ्कीर्तनस्य तत्त्वानुस्मारकत्वात् सर्वसुकरत्वाच्च प्राधान्यात् विशेषतः कार्यत्वमाह—

तत्त्वं ब्रुवाणानि परं परस्तात्
मधु क्षरन्तीव मुदां पदानि ।
प्रावर्तय प्राञ्जलिरस्मि जिह्वे
नामानि नारायणगोचराणि ॥ १७ ॥

तत्त्वमिति । हे जिह्वे भवत्यै प्राञ्जलिरस्मि । किमर्थं नारायणगोचराणि
नारायण एव गोचरो विषयो येषां तानि नामानि विष्णुरित्यादीनि प्रावर्तय
भक्तिपुरस्सरं गाय ।

‘शृण्वन् सुभद्राणि रथाङ्गपाणः जन्मानि कर्माणि च यानि लोके ।
गीतानि नामानि तदर्थकानि गायन् विलज्जो विचरेदसंगः ॥’

इत्यादिविधानात् ।

“एष मे सर्वधर्माणां धर्मोऽधिकतमो मतः ।
यद्भक्त्या पुण्डरीकाक्षं स्तवैरर्च्यन्नरस्सदा ॥”

इति स्मरणञ्च ।

कः पुनर्नारायणो नामेत्यत उक्तं परस्तात् परं तत्त्वं ब्रुवाणानि इति ।

“इन्द्रियेभ्यः परा ह्यर्थाः अर्थेभ्यश्च परमनः ।
मनसस्तु परा बुद्धिः बुद्धेरात्मा महान् परः ॥
महतः परमव्यक्तमव्यक्तात् पुरुषः परः ।
पुरुषान्न परं किञ्चित् सा काष्ठा सा परा गतिः ॥”

इति श्रुतेः । परस्तात् सर्वोपरिष्ठादवस्थिताव्यक्ततत्त्वादपि परं उपरिष्ठादवस्थितं
तत्त्वं परमार्थवस्तु पुरुषस्समष्टिव्यष्टिदेहेषु क्षेत्रज्ञत्वेनान्तर्यामित्वेन च सदा प्रकाशमा-
नादानन्दात्मनश्च पुरुषादन्यस्यातत्त्वाप्रकाशत्वदुःखत्वापरिहारात्तदधीनसत्तास्फूर्तिकतानियमेन

तत्तत्परतन्त्रता चास्तोति युक्तं पुंसः परत्वं तत् पुरुषतत्वं ब्रुवाणानि व्यक्तं
भाषमाणानि । लक्षणयेति शेषः । अन्यथा “ यतो वाचो निर्वर्तन्ते अप्राप्य मनसा सह ”
इति श्रुतिविरोधान्मन आदिसाक्षिणस्तैर्विषयीकर्तुमयोग्यत्वाच्च । अत एव “ यानि नामानि
गौणानि विख्यातानि महात्मनः ” इति स्मर्यते । तदेवमादिपुरुषो नारायण
इत्युपदिष्टं भवति । तथाच भगवद्वचनम् ।

द्वाविमौ पुरुषौ लोके क्षरश्चाक्षर एव च ।
क्षरस्सर्वाणि भूतानि कूटस्थोऽक्षर उच्यते ॥
उत्तमः पुरुषस्त्वन्यः परमात्मेत्युदाहृतः ।
यो लोकत्रयमाविश्य बिभर्त्यव्यय ईश्वरः ॥
यस्मात् क्षरमतीतोऽहमक्षरादपि चोत्तमः ।
अतोऽस्मि लोके वेदे च प्रथितः पुरुषोत्तमः ॥

‘ परस्तात् परं तत्त्वं ब्रुवाणानि नारायणगोचराणि नामानी ’ त्यंशेनैतन्नि-
रस्तं यदाहुरेके शुक्वामदेवयोरिव कृष्णदधीच्योस्तथा चैवेतरस्य भूतात्मयोगजं खल्वार्ष-
मेवैश्वर्यमाख्यात [?] मिति परस्तात् परतत्वरूपस्याऽखिलतत्त्वव्यापकत्वसंभवात् भूतमात्र-
व्यापकत्वकल्पनानुपपत्तेः, तत्कल्पने तद्वचनविरोधाच्च ।

“ अहं सर्वस्य जगतः प्रभवः प्रलयस्तथा ।
मत्तः परतरं नान्यत् किञ्चदस्ति धनञ्जय
मयि सर्वमिदं प्रोतं सूत्रे मणिगणा इव ॥ ”

इति हि भगवद्वचनम् । ननु च कृष्णो नाम पुरुषतत्त्वम् ; अतः प्रकृतिमहदहङ्कार-
शब्दस्यैश्वर्यस्य गन्धश्रोत्रत्वक्चक्षुजिह्वाघ्राणवाक्पाणिपादपायूपस्थाकाशवायुबन्धिवार्यबनिव्या-
पकत्वेऽपि शिवशक्तिसदाशिवेश्वरशुद्धविद्यामायातत्त्वव्यापकत्वाभावान्न सर्वात्मत्वमस्येति
चेत् मैवम् । “ पुरुषाच्च परं किञ्चित् ” इति श्रुत्या पुरुषतत्त्वादुपरि तत्त्वान्तरप्रति-

षेधात् “ पुरुष एवेदं सर्वं यद्भूत यच्च भव्य ” मिति श्रुत्यन्तराच्च शिवसदाशिवे-
श्वरतत्त्वानां षट्त्रिंशत्तत्त्ववादिभिः कल्पितानां पुरुष एवान्तर्भाववश्यंभावात् । अतः

“ त्वामेवान्ये शिवोक्तेन मार्गेण शिवरूपिणम् ।
ब्रह्माचार्यविभेदेन भगवन् समुपासते ॥ ”

शक्तिमायाविद्याऽविद्याकालकलानियतिरागाणां प्रकृत्यन्तर्भावाम्युपगमाच्च । तथाच
भगवद्ब्रह्मचरं—

“ विद्याविद्ये मम ननू विद्वयुद्धव शरीरिणाम् ।
बन्धमोक्षकृती आद्ये मायया मे विनिर्मिते ॥
महाभूतान्यहङ्कारो बुद्धिरव्यक्तमेव च ।
इन्द्रियाणि दशैकञ्च पञ्च चेन्द्रियगोचराः ॥
इच्छा द्वेषः सुखं दुःखं संघातश्चेतना धृतिः ।
एतत् क्षेत्रं समासेन सत्त्विकारमुदाहृतम् ॥ ”

इति । “ कालवृत्त्यां तु मायायाम् ” इति कालस्य मायाकार्यत्वञ्च भागवत
उपदिष्टम् । नो चेत्तस्य सत्त्वेनात्माद्वैत श्रुतिविरोधः स्यादिति । तदयमिह परमार्थः । निर्वि-
कल्पकनित्यनिरस्तनिखिलद्वैतानुषङ्गे सदानन्दचिदेकरसे स्वात्मन्येवानवच्छिन्नाहंविमर्शसारे
क्रममाणः पुरुषो नारायण इति पञ्चविंशतितत्त्ववादिभिः, परमशिव इति षट्त्रिंशत्तत्त्व-
वादिभिश्च वर्ण्यते ।

“ मूलप्रकृतिरविकृतिः महदाद्याः प्रकृतिविकृतयः सप्त ।
षोडशकश्च विकारो न प्रकृतिर्न विकृतिः पुरुषः ॥ ”

इति पञ्चविंशतितत्त्वानि ।

“ पञ्चभूतानि तन्मात्रापञ्चकंचेन्द्रियाणि च ।
क्रियाज्ञान निमित्तानि [?] पञ्च पञ्च विभागशः ॥

मनो बुद्धिरहङ्कारो गुणाः प्रकृतिपुरुषौ ।

रागो विद्या कला चैव नियतिः काल एव च ॥

महामाया च विद्या च महेश्वरसदाशिवौ ।

शक्तिश्शिवश्चेति विदुः षट्त्रिंशत्तत्त्ववादिनः ॥ ”

तत्र स्वात्मानमेव जगदात्मना विवर्तयितुमिच्छन् पुरुषश्शिवः “ आत्मा वा अयमेक एवाग्र आसीन्नान्यत् किञ्चन मिषत्सोऽकामयते ”ति श्रुतेः, एषैवेच्छाशक्तिः अप्र(ति) हतेच्छत्वात् सदैवाङ्कुरायमाणं जगदहमिदमिति स्वात्ममात्रत्वेन पश्यन् सदाशिवः अङ्कुरितजगदिदमहमिति स्वात्मनो बहिरिव दर्पणनगरन्यायेन पश्यन्नीश्वरः अनयोस्सम्बन्धिन्यहन्तेदन्तयोरैक्यप्रतिपत्तिश्शुद्धविद्या अहन्तेदन्ताभेदप्रतिपत्तिर्माया तथा व्यामोहितः परमपुरुष एव पुरुषः, अत एव नित्यस्यापि तस्य भवनाभवनहेतुः कालः सर्वस्य व्याप्तस्यापि वस्तुपरिच्छेदः, हेतुर्नियतिः सर्वकर्तुरपि किञ्चित्कर्तृत्वहेतुः कलास्सर्व[स्यापि]ज्ञस्यापि किञ्चिज्ज्ञानकारणमविद्या चिदेकरसत्वादसंगस्यपि देहदैहिकप्रपञ्चाभिषङ्गो रागः एतत्कालादिपञ्चकमागमेषु स्वनिदानमायासहितं कञ्चुकषट्कमाख्यायते, अनेन वेष्टितः पुमान् सङ्कोचमुपगच्छतीति । अतः पुरुषतत्त्वं एव विद्योपहितरूपं शिवसदाशिवेश्वरतत्त्वानि मायोपहितं रूपं पुरुषतत्त्वं कालनियतिकलाविद्यारागा मायाया एव रूपभेदाः, ते च मायाविधे वस्तुतः पुरुषाधिष्ठिता प्रकृतिरेव—

“विधाविधे मम तनू विद्वयुद्धव शरीरिणाम् । बन्धमोक्षकरी विद्या ॥”

सत्वरजस्तमोगुणस(मवा)यात्मिका माया ; तत्रापि सत्त्वं ज्ञानशक्तिः, रजः क्रियाशक्तिः, तम आवरणशक्तिः ; सैव रजोगुणप्रधाना महदादि पृथिव्यन्तानान्तत्वानां सृष्टिहेतुस्तदधिष्ठाता पुरुषो ब्रह्मा ; सत्त्वगुणप्रधाना स्थितिहेतुस्तदधिष्ठाता विष्णुः ; तमोगुणप्रधाना संहारहेतुस्तदधिष्ठाता रुद्रः ; मायाविद्याभेदमप्राप्ता प्रकृतिशक्तिर्या स्वरूपानन्दानुभवतृप्तस्यापि पुंसश्शिवस्यपारमैश्वर्यप्रकाशनेच्छात्मिका भवति ; अतश्शिवशक्त्या-

दीनां पुरुषप्रकृत्योरन्तर्भावः सूपपाद एव महदाद्यवन्यन्तानां तत्वानां मूलकारणं प्रकृतिः, तस्याः प्रथमस्पन्दो महान् स तु द्रव्यज्ञानक्रियाशक्तिसङ्ग्रहात्मा तद्विलासोऽहङ्कारः तच्छक्तित्वविस्ताराकारः ; तत्र द्रव्यशक्तिः—तथा च पराशरः—

यानि मूर्तान्यमूर्तानि यान्यत्रान्यत्र वा क्वचित् ।

सन्ति वै वस्तुजातानि तानि सर्वाणि तद्वपुः ॥

इति ॥ अहङ्कारस्य कार्याणि शब्दादिपञ्चतन्मात्राप्याकाशादिपञ्चभूतानि च तेषाञ्च पूर्वपूर्वकार्याण्युत्तरोत्तराणि, तानि च ग्राह्याणि । कार्याणि च क्रियाशक्तेरहङ्कारात्संभूतानि श्रोत्रादीनि पञ्च ज्ञानेन्द्रियाणि शब्दादिज्ञानसाधनानि, वागादीनि च पञ्च कर्मेन्द्रियाणि च वदनादिक्रियासाधनानि, तानि ग्राहकाणि करणानि च कथ्यन्ते । ज्ञानशक्तेरहङ्कारादुत्थितम्भनोबुद्ध्यहङ्कारात्मकं सङ्कल्पनिश्चयाभिमानसाधनमन्तःकरणं दिग्वातार्कप्रचेतोऽश्विवह्नीन्द्रोपेन्द्रमित्रब्रह्मचन्द्रप्रजापतिरुद्राख्यं करणदेवतावृन्दञ्च, तदिदं ज्ञातृकतृसंज्ञं भवति । यत् पुनः क्षेत्रज्ञाधिदैवतञ्चितं तन्मन आदित्रयसमष्टिरूपत्वात् चन्द्रादित्रिकसंग्रहरूपत्वाच्चानुसन्धानात्मककार्यान्तरानुमेयरूपमपि न पृथग्गण्यते त्वग्ग्राहौ गुणः स्पर्शः तदाश्रयो वायुः स चेष्टाहेतुः, चक्षुर्ग्राह्यो गुणो रूपं तदाश्रयं तेजः तद्वाचकं प्रकाशकञ्च जिह्वाग्राह्यो गुणो रसः तदाश्रया आपः, ता आप्यायनक्लेदनकर्त्र्यः, घ्राणग्राह्यो गुणो गन्धस्तदाश्रया भूमिः सा विश्वधारिका, वाय्वादिष्वाकाशादीनामनुप्रवेशाच्छब्दाद्याश्रयत्वमपि द्रष्टव्यमिति । किं पुनः कीर्तितैर्नामभिरित्यत उक्तं—मुदां पदानीति । अशेषमुखप्रदानीत्यर्थः । तथाच श्रुतिः— ।

‘ सत्यं ज्ञानमनन्तं ब्रह्म यो वेद निहितं गुहायां परमे व्योमन् ।

सोऽश्नुते सर्वान् कामान् सह ॥ ’

इति । तत्र हेतुर्मधु क्षरन्तीवेति । मधुब्राह्मणोक्ता ब्रह्मविद्या मधु तत् क्षरति स्रवति येभ्यस्तानि मधुक्षरन्ति, इवशब्द उत्प्रेक्षार्थः । ब्रह्मविद्याजनकानीत्यर्थः । तत्र हेतुः परस्तात् परं तत्त्वं भुवाणानीत्यनेनोक्तः ॥

A Critique of Śaṅkara's Rendering of 'Yeyam prete.'

By

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When commentators differ about their interpretations one cannot stand silently by without offering some judgment on the conflict of views.

S. RADHAKRISHNAN.

The text: *Yeyam prete vicikitsā manuṣye*

Astītye ke nāyamastīti caike

of the *Kaṭhōpaniṣad* embodying the third boon of Naciketas has been differently interpreted by the famous Bhāṣyakāras. Śaṅkara¹ has it that the third boon relates to the question of the survival of the soul of man after death. Rāmānuja² rejects this view and refers the third boon to the problem of the nature of Final release—the persistence of personality in Salvation. Madhva³ declares that the third boon is concerned with the question of God's Government of released souls. The *Upaniṣad* itself bestows the most casual attention on the after-life of the soul and is preeminently concerned with the nature of the Supreme Being. If any conclusion is possible from this, it can only be that the question of the survival of the soul after death was not regarded as the subject-matter of the third boon at all.

Rāmānuja and Madhva maintain that Naciketas *prima facie* would not and could not at all have entertained any doubts about the survival of the soul after death. To judge from Naciketas' own admonition to his father that those who bestow decrepit cows on Brahmins find their way to "joyless regions," it is clear that the boy believed

1. Prete mṛte manuṣye asti ityeke—asti śarīrendriyamanobuddhivyatrikto dehāntarasambandhyātmā ityeke. Nāyam evamvidho astīticaike. Śaṅkara on *Kaṭha*, i, 1, 20.

2. Yeyam prete iti na śarīravīyogamātrābhīprāyam kintu sarvagandhavinīr-mokṣābhīprāyam. Śrībhāṣya on 1, 2, 12.

3. Prete mukte manuṣye Niyāmakatvena Bhagavān asti iti jñānīno vadanti. Nāstītyajñāṇa. Madhva on *Kaṭha*, 1, 1, 20.

4. Anandā nāma te lokāstān sa gacchati tā dadat.

in an after-life. His lofty remarks on the transience of human beings who "mature and die like corn and are born again like corn"⁵ calculated to console his "repentent father"⁶ would make no sense if he had had the least doubt about the survival of the human personality after death.

For his second boon again, as Rāmānuja points out, Naciketas chooses the science of a Sacrificial Fire which is the means of experiencing some fruit to be attained by a Soul that has left the body; and this choice could not be made by one who knows not that the Soul is different from the body and is sure to survive the body.⁷ The point, in other words, is this. Naciketas asks for the *Agni Vidyā* which leads to Heaven (*Svargya*) and is evidently wanting *Svarga* for himself even as admitted by Śaṅkara.⁸ He knows too, that the denizens of Heaven attain immortality. It follows then that Naciketas was quite sure of the post-mortem existence of his Soul. For, otherwise, his second boon could not have been asked in the form in which we find it.

From another point of view also, Rāmānuja shows the inadequacy of Śaṅkara's interpretation of the third boon. The *Svarga* asked for in the second boon, says he, is nothing short of ultimate release⁹ His reasons are that (1) this state is held to transcend births and deaths and (2) that since later on Naciketas resolutely rejects the tempting offers of the joys of wealth, women and eternal life as impermanent, he could not, on an earlier occasion, have asked for such an impermanent state of *Svarga*.¹⁰ The impermanence of *Svarga* being a settled fact already in the Upaniṣadic literature,¹¹ the term *amṛtatva* in the text, with reference to the second boon, would not logically fit in with such an impermanent state. Śaṅkara makes an attempt to explain away the term *amṛtatva* here, as "devatva" but is not consistent. In another place in the *Kaṭha* he renders '*amṛtatva*' as limited immortality,¹² but in every other place in the *Kaṭha* the term has been ren-

5. Sasyamiva martyaḥ pacyate sasyamivājāyate punaḥ.

6. Kim mayoktam iti śokāviṣṭam āha pitarām. Śaṅkara on *Kaṭha* 1, 1, 6.

7. Dvitiyena vareṇa uttīrṇadehātmanubhāvya phalasāadhanabhūtā agni vidyā vṛtā tadapi dehātriktātmānabbhijñāsyā na sambhavati—

Rāmānuja *Śrībhāṣya* 1, 2, 12.

8. Mahyam Svargārthine—Śaṅkara on *Kaṭha* 1, 1, 13.

9. Svarga śabdenātra paramapuruṣārthalakṣaṇamokṣo abhidīyate—*Śrī Bhāṣya* 1, 4, 5.

10. Tatrasthasya ca janmamaraṇābhāva śravaṇāt. Uttaratra ca Kṣayiphala-karmanindādarśanāt—*Śrī Bhāṣya* i, 4, 5.

11. Nākasya prṣṭhe Sukṛtenubhūtvā imam lokam hīnataram vā Viśanti. Muṇḍaka Upaniṣad 1, 2, 10.

12. āpekṣikam (*Kaṭha* 2, 3, 16).

dered by him into Final release.¹³ On grounds of consistency, therefore, Rāmānuja finds it his duty to interpret the term *amṛtatva* as Final release everywhere. Naciketas, then, would not have asked for Final release in the *second* boon if he was not assured of the Soul's post-mortem existence. It is highly improbable, therefore, to suppose that he yet queried about the Survival of the Soul after death in the *third* boon.

The survival of the Soul is also clearly taught by Yama in *Kaṭha* 1, 1, 18—"One who performs the Naciketas fire-sacrifice, casts off all bonds of death and rejoices in Heaven-World."¹⁴ Even the latent doubts, if any, of Naciketas must have vanished after so clear a statement. Would it not then be disingenuous to expect him to ask a question about the survival of the Self immediately after Yama stopped his harangue, in 1, 1, 20?

The body of texts called *Upaniṣads* occupy a logical place in the history of Vedic Literature and Philosophy. According to received historical estimates, the *Upaniṣads* mark a definite advance on the *Mantra* and *Brāhmaṇa* portions in that they represent the *Jñāna Kāṇḍa*. The entire edifice of the *Karma Kāṇḍa* of the *Mantras* and *Brāhmaṇas* is built upon a tacit admission of the distinction of the Soul from the body and its survival after death. The fruits of Heaven held out in the texts of the *Karma Kāṇḍa* such as *Jyotiṣṭomena yajeta Svargakāmaḥ* would lose all meaning in the absence of such a recognition. Such a postulate must clearly be assumed in the case of *Jñāna Kāṇḍa* of the *Upaniṣads*, their *Ātman-Brahman* equations *et hoc*. A genetic view of the nature of contents and place of the *Upaniṣads* in Vedic Literature would easily show that the question of the survival of the human personality after death is a *res judicata* therein. It is admitted, on all hands, that the Vedic Seers, in spite of their polytheism and nature worship, had a firm faith and conviction in after-life. The *Upaniṣads* which represent a further advance on the speculations of the Vedic age could not, therefore, have raised such a question. One can understand such a question being asked with a view to adduce scientific proof and logical demonstration of the Survival of the Self. But, in the case of the *Kaṭha* no such attempt is traceable.¹⁵ The ques-

13. cf. *Kaṭha* 2, 1, 1; 2, 1, 2; 2, 2, 8; 2, 3, 1; 2, 3, 14.

14. Sa mṛtyu pāsān purataḥ prañodya śokātigo modate Svargaloke.

15. Anent the *Kaṭhopanīṣad* Dr. Sir S. Radhakrishnan opines: "The *Kaṭhopanīṣad* is later still. We find in it elements of the Sāṃkhya and Yoga Systems. It quotes freely from the other *upaniṣads* and from the *Gītā*." (p. 18 *Philosophy of the Upaniṣads*). The doctrine of the Transmigration of Souls and of the Survival of the Soul after death being unquestionably recognised in the earlier *upaniṣads* and elaborately established in the *Gītā*, it would appear quite superfluous for the *Kaṭha* to take it up again for treatment.

tion of the Survival of the Soul, supposed to be raised in i, 1, 20 and ii, 2, 4, receives a very wooden answer in ii, 2, 6 and we hear no more of the 'problem'!

The term 'prete' in the text 'Yeyam prete' does not necessarily refer to the physical death of quotidian occurrence with which we are all familiar. Pra+itaḥ=prakarṣeṇa itaḥ : : pretaḥ would as well fit in with ultimate release from the cycle of Samsāra. One need not look askance at such an interpretation as a piece of hairsplitting etymology. We have a classical instance of the root ī with pra used in the sense of ultimate release in the *Bṛhadāraṇyaka Upaniṣad* where Yājñavalkya is held to have declared the truth of there being no consciousness in Mokṣa: *Na pretya saṁjñā asti*.¹⁶ And Śaṅkara rightly interprets this as referring to Final release: *Na tatra pretya viśeṣa saṁjñā asti—kāryakaraṇa saṁghātebhyo vimuktasya*.¹⁷ And Ānandagiri clarifies it: *Tatreṭi kaivalyoktiḥ*.¹⁸

Internal textual evidence too, supports the contention that *Yeyam prete* has reference only to the state of Final release. For, the same question is paraphrased and repeated in II, 2, 4:—

Asya Visramsamānasya Śarīrasthasya dehinaḥ

Dehād vimucyamānasya Kīmatra pariśiṣyate.

where either of the two terms *Visramsamāna* or *Vimucyamāna*, if referring to mere death, would be redundant. *Visramsamāna* refers, admittedly, to mere death while *vi+mucyamāna* could better be taken to mean complete release from bondage.¹⁹ We are therefore left unconvinced by Śaṅkara's special pleading that *Vimucyamāna* is the same as *Visramsamāna* writ otherwise.²⁰

On Śaṅkara's view that the third boon concerns the question of the Soul's post-mortem existence, textual inconsistency is bound to arise. For, the *Kāṭha* itself in i, 2, 14, correlates the third boon with

16. *Bṛhadāraṇyaka Upaniṣad* iv, 5, 13.

17. Śaṅkara's comm., on *Bṛhadāraṇyaka*, Ibid.

18. Ānandagiri's sub. comm., Ibid.

19. Dehād viśeṣeṇa mocanam nāma Muktireva . Sthūladehaparitṛyāgastu Visramsamānasyetyanenaiṣa ukto bhavati. Madhva, *Kāṭhaka Bhāṣya*, *Sarvamūla*, p. 648.

20. Visramsamāna śabdārthamāha: dehādvimucyamānasyeti—Śaṅkara, *Kāṭhaka Bhāṣya* ii. 2, 4.

the nature of the Supreme Being. However inconvenient it may be, Śaṅkara has to admit that '*Anyatra dharmāt . . .*' (i, 2, 14) raises a question with reference to the Supreme Being.²¹ Now, this makes four questions in all and not three. But, the *Kaṭha* itself clearly states that Naciketas asked for three boons and three alone. It must be admitted therefore that '*Anyatra dharmāt . . .*' is a continuation of the subject-matter of the third boon itself and constitutes no new query. The text '*Anyatra dharmāt*' referring admittedly to the Supreme Being, it follows that '*Yeyam prete*' too, must refer to the same subject and not to the Individual Self. It is necessary that of the two texts '*Yeyam prete . . .*' and '*Anyatra dharmāt . . .*' one must be made to lose its surface interpretation if the aforesaid numerical contradiction is to be avoided. One cannot stick to the surface interpretations of both and yet explain the numerical contradiction. When it comes to a question of one of the texts losing its surface interpretation '*Yeyam prete . . .*' will have to be subordinated to '*Anyatra dharmāt*' both because of the superiority of the *upsamhāra* (conclusion) over the *upakrama* (initial statement) as well as of the principle of precedence being given to the Superior (*abhyarhitam pūrvam*). The subject of the Supreme Being is easily superior to that of the Individual; and hence '*Anyatra dharmāt*' takes the lead and has a right to determine what '*Yeyam prete*' must mean. The application of the contrary method of *upkrama parākrama* would not be of any avail to Śaṅkara since he too, would hardly think of subordinating '*Anyatra dharmāt*' referring to the Supreme to '*Yeyam prete*'—a text confined admittedly to the Individual.

Fully alive to the difficulty in adopting the principle of textual subordination to explain the numerical contradiction, Śaṅkara presses into service the dual aspect theory of the Self. His argument in essence is that the contradiction could be removed if we posit that the texts '*Yeyam prete . . .*' and '*Anyatra dharmāt . . .*' deal with two different but not mutually exclusive aspects of the same Self:²² the one with its embodied aspect and the other with its transcendental. But, even this ingenious device of a two-aspect theory fails to save him. In spite of all his laborious explanations the numerical contra-

21. *Yadīdṛśam Vastu Sarvavyavahāra gocarātītam paśyasi tad vada.* (Śaṅkara on *Kaṭha* 1, 2, 14).

cf. also: *Anyatra dharmāt iti paramātma Viśayaḥ*—Śaṅkara on *Vedānta Sūtra* 1, 4, 6.

22. *Tasmāt 'Yeyam prete' ityasyaiva prāśnasya anukarṣaṇam etat 'anyatra dharmāt' iti; yattu prāśnacchāyāvailakṣaṇyam uktam tadadūṣaṇam. Tadiyasyaiva Viśeṣasya punaḥ prachyamānatvāt.* Śaṅkara *Bhāṣya* on *Vedānta Sūtra* 1, 4, 6.

diction asserts itself once again. Śaṅkara makes out that the question '*Yeyam prete . . .*' deals with the general features of the Individual as fundamentally distinct from the body whilst '*Anyatra dharmāt*' takes up the special problem of that Self's identity with the Supreme,²³ which fact is, for the nonce, clouded by a foundational Nescience. On Śaṅkara's own showing, then, '*Yeyam prete . . .*' and '*Anyatra dharmāt . . .*' constitute only one question. Added to the *Agni-vidyā*, the subject of the second boon, there will only be two questions and one more is wanting to make up the number three insisted upon in the text of the Upaniṣad²⁴ and by the author of the *Vedānta Sūtras*!²⁵ The ingenious device of the dual-aspect theory ultimately lands Śaṅkara in a blind alley. Not only that. It also suffers from a schematic fallacy. There is more of passion than reason in the methodological device of the dual-aspect theory set up by Śaṅkara. For, if the text '*Yeyam prete . . .*' deals with the embodied aspect of the Self and '*Anyatra dharmāt . . .*' is meant to 'take up' its transcendental aspect, we should expect to find the discussion of the former aspect closed and answer to the first question given before launching into the latter problem—the Transcendental aspect of the Self. But, as a matter of fact, we do not find the first question answered and the matter clinched until we come to ii, 2, 7 while the topic of the Transcendental Self is taken up as early as i, 2, 14, i.e., as many as forty-nine verses earlier. Surely, Naciketas would not have sprung a new question, albeit concerning another 'aspect' of the Self, on Yama while his first question about the embodied Soul still remained unanswered!

DID NACIKETAS DIE?

Madhva, in his criticism of Śaṅkara's interpretation of '*Yeyam prete . . .*', opines that the doubt as to the survival or otherwise of the human Soul after death would simply not arise in the case of Naciketas who had himself died consequent on his father's curse.²⁶

23. Pūrvatra hi dehādivyatiriktasya ātmano astitvam Prṣṭam. Uttaratra tu tasyaiva asamsāritvam prcchyata iti. Yāvadyavidyā na nivartate tāvaddharmādigocaratvam jīvasya, jīvatam ca na nivartate. Tannivrttau tu prājña eva—Op., cit.

24. Trīṇ varāṇ vṛṇīṣva.

25. Trayāṇāmevacaivamupanyāsaḥ praśnaśca i, 4, 6.

26. Na ca mṛtvā yamam prāptasya Naciketaso mṛto 'asti naveti saṁśayo Yujyate. Madhva understands Uddālaka's angry retort: 'To death I give thee' as tantamount to a curse that he should die. Mṛtyave tvā dadāmi-Mriyasveti: Rāghavendra Tīrtha's *Khaṇḍārtha*. The soundness of this view is borne out by a statement in the *Taittirīya Brāhmaṇa*, which contains a parallel version to our story, that "when the boy stood up, a Voice said unto him"

Madhva's assumption that Naciketas died and left his material body before proceeding to Yama is confirmed by the boy's request in the form of the first boon that his father shall "recognise him as his own son" and greet him when he returned to him. If the boy had not died in any sense, but had simply undertaken an excursion into the regions of Yama, corporeally intact, there would have been no conceivable difficulty for his father to have "recognised" his son! Śāṁkara himself fully endorses the view that the boy was anxious to be "recognised" by his father "as his own son":—*Pratītāḥ labdha smṛtiḥ Sa evāyam putraḥ mamāgata ityevam pratyabhijānan ityarthah*. If the boy returned to his father in his own person, the latter could not possibly take any time to "recollect" (*labdha smṛtiḥ*) and "recognise" him. Could the father have forgotten his own son within the lapse of three days?

On the other hand, there is strong external evidence in support of Madhva's contention that (1) the boy Naciketas *died* actually before he went to Yama; (2) that the doubt as to the post-mortem existence of the Soul could not have arisen in his case; and (3) that therefore, the text '*Yeyam prete . . .*' does not refer to the survival of the Self but to the far more transcendental problem of Final release. The story of Naciketas occurs in another version in the *Taittirīya Brāhmaṇa* of the *Black Yajur Veda* which, as translated by Max Müller, runs :—

Vājaśravasa, wishing for reward, sacrificed all his wealth. He had a son called Naciketas. While he was still a boy, Faith entered him at a time when the cows that were to be given as presents to the priests were brought in. He said, "Father, to whom wilt thou give me?" He said so a second and a third time. But the father turned round and said to him, "To Death I give thee."

Then a Voice said unto young Gautama as he stood up. ²⁷ "He said, 'Go away to the house of Death. To Death I give thee.' Go, therefore, to Death when he is not at home, and dwell in his house for three nights without eating. If he should ask thee, boy, how many nights hast thou been here, say three. When he asks thee: what didst thou eat the first night, say, thy offspring. What didst thou eat the second night? say, thy cattle. What didst thou eat the third night? say, thy good works."

He went to Death while he was away from home and dwelt in his house for three nights without eating. When death returned and asked, "Boy, how many nights hast thou been here?" He answered: Three.

"What didst thou eat the first night?"

"Thy offspring."

"What didst thou eat the second night?"

"Thy cattle."

"What didst thou eat the third night?"

"Thy good works."

Then he said, "My respects to thee, Venerable Sir, choose a boon."

"*May I return living to my Father?*"²⁸ he said.

"Choose a second boon!"

"Tell me how my good works may never perish."

Then he explained to him the Naciketas Fire and hence his good works do not perish.

"Choose a third boon!"

"*Tell me the conquest of Re-Death.*"²⁹

Then he explained to him this Naciketas Fire³⁰ and *he conquered Re-Death.* (Italics mine.)

The foregoing account clearly states that Naciketas' first boon was that *he may return living to his father.* Mark the term *Jīvan*, which means but one thing: that the boy died once, was conscious of it and wants to regain a material body. From his own experience, then, Naciketas would have certainly realised that human souls *do survive* after death and could not have entertained the least doubt about it. Still more significant is the third boon which he asks for: "*the conquest of Re-Death.*" The term '*punar-mṛtyu*' is not mere death but complete annihilation of the cycle of births and deaths, i.e., to say ultimate release or Mokṣa.³¹ This shows that the third boon asked for did not

27. This evidently means that a Voice from on high addressed his spirit as it rose from the body.

28. Pitārameva Jīvan ayāni iti. *Taittiriya Brāhmaṇa*.

29. *Punar mṛtyorme apacitim brūhīti hovāca.*

30. The reference to the Naciketas Fire (Vide *Svargyāgni*) in connection with the Second and Third boons also lends weight to Rāmānuja's contention that the Agni Vidya of the Second boon does not refer to some sort of ordinary Fire Sacrifice leading to the popular *Svarga* but to the Agni Vidya leading to *Mokṣa*.

31. Śāyana clearly endorses this view. *Janma svikāram vinā muktau satyām Soyam punar mṛtyurapakṣiyate* Śāyana's Comm., on *Taittiriya Brāhmaṇa* III, 11, 8.

relate to physical death or the Survival of the Self after death. In any case, conquest of Re-Death assumes firm conviction in the *Survival of the Conqueror after the event*. Cogito ergo sum. The terms *preta*, *maraṇam prāpya*, *maraṇam mānuprākṣiḥ*, etc., would thus automatically resolve themselves into Final release even as indicated by the terms *Mahati sām̐parāye*, *dehāt Vimucyamāna* and *punarmṛtyorapaciti*. Thus, the *Taittirīya Brāhmaṇa* fully endorses the contention of Rāmānuja and Madhva that Naciketas, by his third boon, asked for instruction on the nature of Final release. In the light of which Śaṁkara's confinement of the third boon to the question of the post-mortem existence of the Soul turns out to be erroneous.

There can be no two opinions that in interpreting the ancient texts of the Upaniṣads, it is always safe and sound to rely on the help and guidance afforded by the Vedic Literature itself. Even the orthodox Vedāntins have always entertained a genuine suspicion for the *āpāta pratīti* or surface-interpretation of texts, and have always insisted on the employment of the six canons of interpretation *upakrama*, *upasaṁhāra*, etc., while the Mimāṁsakas have emphasised the supreme value of *Samākhyā* or parallel texts in support of any given interpretation.

The *Kaṭhōpaniṣad* is believed to have originally belonged to the *Kāṭhaka Saṁhitā* of the *Black Yaṇur Veda* and the occurrence of another version of the story of Naciketas in the *Taittirīya Brāhmaṇa* makes it probable that the Upaniṣad itself, representing, *qua* Upaniṣad, a later literary stratum than a well-known *Brāhmaṇa* of its own original *Saṁhitā*, is presumably indebted to that *Brāhmaṇa* for the episode in question; in which case, the latter's interpretation in the light of its original and parallel version in the *Taittirīya Brāhmaṇa* would be the only legitimate manner of approach. Even supposing that the *Taittirīya Brāhmaṇa* it is that represents the later version, the fact still remains that its evidence, in so far as it furnishes the earliest commentary on the Naciketas episode, must be superior to that of a latter-day commentator like Śaṁkara.

University Notes.

Pro-Chancellor.—The Hon'ble Rajah Sir S. R. M. Annamalai Chettiar, LL.D., Kt., of Chettinad, the Founder and Pro-Chancellor of this University, has recently had the distinction of Doctor of Laws conferred upon him by the Madras University. It is a fitting tribute to one who has done so much for the cause of Education in South India and has perpetuated his name by founding the Annamalai University which is called after him. We felicitate the Pro-Chancellor on this new distinction.

Vice-Chancellor.—Rao Bahadur S. E. Runganadhan, M.A., I.E.S., Vice-Chancellor, Annamalai University, on the expiry of his term of office, has been re-appointed for a further period of three years. The University is indeed to congratulate itself upon retaining the services of such an eminent and distinguished educationalist. Rao Bahadur S. E. Runganadhan has been at the head of the administration since its inception and the successful running of this new University is largely due to his untiring efforts on its behalf. We congratulate him on his re-appointment and we congratulate ourselves no less.

New Courses.—Two new courses have been instituted this year:

A four-year course in the theory and practice of Music leading to the Diploma of Sangitha Bhushana, and a one-year course of training to Pandits leading to the Pandits' Training Certificate.

University Special Lectures.—Dr. W. Blaschke, Director of the Mathematische Seminar, Hamburg University, delivered a course of two lectures on "Integral and Topological questions of Differential Geometry" in February 1932.

Mrs. F. M. B. Rosenthal, F.R.C.S., A.R.C.M., of the Nizam Educational Service, delivered a lecture on "Goethe and His Masterpiece 'Faust'" in February 1932, on the occasion of the Goethe Centenary Celebration.

The Rev. Father H. Heras, S.J., Director of the Indian Historical Research Institute, St. Xavier's College, Bombay, delivered a lecture on "Was Conjeevaram always a Pallava capital?" in March 1932.

Congress and Conferences.—The Vice-Chancellor attended the annual meeting of the Inter-University Board, held at Lahore in March 1932.

Mr. L. K. Govindarajulu Naidu, B.A., B.L., Director of Physical Education, was deputed to attend the Physical Education section of the Provincial Teachers' Conference held at Madura in May 1932. He read a paper on "Some problems of Physical Culture."

Endowments.—The Hon'ble Rajah of Chettinad has given a sum of Rs. 25,000 to be added to the permanent Endowment Fund of the University besides a free gift of 168 acres of land.

Research Students 1930-1932: History.—Mr. B. V. Ramanujam, M.A., "History of Sri Vaishnavism in the Tamil country."

Economics.—Mr. A. R. Kuppuswamy, B.A. (Hons.), "Co-operative Movement in South Arcot."

Mathematics.—Mr. P. Ganapathi B.A. (Hons.), "Differential Geometry."

Physics.—Mr. G. Sivaramakrishnan, B.A. (Hons.), "The Magnetic Susceptibilities of Polar Liquids."

Sanskrit.—Mr. D. Subrahmanyam, B.A. (Hons.), "Transport in Ancient India."

Chemistry.—Mr. A. Venkatasubban, B.A., "Synthetical and Analytical Experiments on Alkaloids and Chemical Investigation of some of the Indian Medicinal Plants."

1932-1933: *Economics.*—Mr. C. V. Sundararaman, B.A. (Hons.), "Land Revenue administration in South Arcot."

Mathematics.—Mr. S. Venkatachari, B.A. (Hons.), "Mathematical Economics."

Tamil.—Mr. N. K. Srinivasan, B.A., "The History of Tamil Literature from A.D. 1100—1400."

Sanskrit.—Mr. R. Ramakrishnan, B.A. (Hons.), "A Critical Study of the Vakyapadiya."

Research Grants.—Mr. N. S. Subba Rao, Lecturer in Physics, was deputed for advanced study and research work in Spectroscopy under

the guidance of Dr. A. L. Narayanan at the Kodaikanal Observatory. Mr. G. V. Krishnaswami Ayyangar, Reader in Mathematics, also completed his research work in Astronomy under Dr. Royds.

Dr. M. O. Thomas, M.A., Ph.D., the Librarian of the University, who went to England to take a course in Librarianship, has returned and taken up his duty after his successful completion of the Diploma Course of Librarianship in the University of London.

Improvements.—The departments of Chemistry, Botany and Zoology have been further extended and equipped to meet the growing demand for teaching in these subjects. The Physics Department has already been enlarged to facilitate the carrying on of Honours work and higher research.

Bibliographical Notes.

A.

THE DEVELOPMENT OF JAINISM IN NORTH INDIA*

A recent publication throwing light on this little known topic forms No. 6 of the Studies in Indian History of the Indian Historical Research Institute of St. Xavier's College, Bombay, and is a thesis submitted to the University of Bombay, for the degree of Master of Arts, in March, 1929. The Rev. H. Heras, S.J., the enthusiastic and indefatigable Director of the Institute, has put forth a fairly rapid succession of historical monographs embodying the research work of his scholars, including this and the previous publication of the *Kadamba Kula* by Mr. G. M. Moraes, M.A. Mr. C. J. Shah, the author of the present monograph, is a Gujarati Jain and has rightly limited his treatment of the subject to the tracing of the fortunes of Jainism in North India till the epoch of the Council of Valabhi, in A.D. 526, which drew up the final list of canonical works and brought the unrecorded period of Jaina history to an end, the inscriptions referring to the Jaina community becoming numerous from the 6th century onwards. He does not take into his treatment the institutional and doctrinal development of that religion, nor the profound part played by it in the political, religious and literary development of South India or in the Deccan. His estimation of the Jaina contribution in the cultural and religious life of the country is naturally generous and perhaps a little bit over-valued. But it is the natural reaction that a long period of neglect of Jaina contributions to India, broken only by occasional glimpses into them rendered possible by the labours of scholars like Colebrooke, Bühler, Hoernle, Jacobi, J. Charpentier and others, should result in the new wave of enthusiastic research of which this work is a good illustration.

The historicity of Pārśvanātha is attempted to be proved by means of indirect references drawn from inscriptions and monuments and by a reference to Nātaputta's system in the *Sāmaññaphala Sutta*, interpreted by Jacobi as referring to the term *Cāturyāma*, as distinguished from *Mahāvīra's Pāñcyāma*. Dr. Guerinot declares, in his *Bibliographie*

*By Chimanlal J. Shah, M.A., with a Foreword by the Rev. H. Heras, S.J.-Longmans Green & Co., 1932. pp. xxiv and 292.

Jaina, that there can no longer be any doubt that Pārśvanātha was a historical personage; while Dr. Jacobi says that the last perceptible point in the prehistorical development of Jainism is Parsva, before whom all is hidden in the midst of fable and fiction.

Coming down to Mahāvīra and his times, the author tries to explain away the legend of the Jina taking the form of an embryo, in the womb of a Brahman lady and the transfer of the embryo to the Kshatriyāṇi Triśalā, in the light of the dogmatic canonical assertion that a Brahman can be everything but a Tirthāṅkara. The date of Mahāvīra's *Nirvāṇa* is a highly controversial point. Jacobi maintained that this event took place about 480 B.C., some years before the Buddha's death. Svetāmbara tradition would date the event in 527 B.C., and the Digambaras would date it 18 years later. Proceeding on the basis of historical data merely, like the traditional date of Bhadrabāhu's death, his connection with Chandragupta Maurya and the connection of Suhastin with Samprati and on the assumption that a precise date for the accession of Chandragupta is still impossible, he would arrive at *cir* 480-467 B.C., as the date of Mahāvīra's *Nirvāṇa* and maintain that this would not bring any contradictions into play; while the choice of an earlier date would disregard some real historical facts and coincidences of the Jain annals. But he is careful enough to add that these years define only the limits of possible hypotheses in this very slippery ground of conjectures and probabilities. The author devotes an amount of space to the elaboration of the ideas of *ahimsa* and *syādvāda* in the third section of Chapter II; and he supplements this with a treatment of the most important schisms of the Jaina church, like those of the seven *Ninhagas* of whom the most important was Mankaliputta Gosala who was a self-styled *Jina* or *Tirthāṅkara*. Mr. Shah tries to rebut the conclusion of Dr. Barua, regarding the priority of Gosala's *Jinahood* and the association of Mahāvīra with the Ajivikas. The detected attempt to chisel away the word '*Ājivikehi*' in the cave inscriptions in the Barabar and Nāgārjuni Hills is attributed to the Jaina King, Kharavēla of Kalinga. It is also pointed out how, in many inscriptions after the 6th century A.D., the term *Ājivika* is used for the Digambara sect which was developed by the traditions of Bhadrabāhu of the great famine and of Jinacandra and Śivabhūti of *cir* A.D. 80. The germs of the schism existed even in the infancy of the faith; and Mr. Shah is inclined to accept Sir Charles Eliot's conclusion that the Swētambaras "may represent an older sect reformed or exaggerated by Mahāvīra." The rise of the *Sthānakavāsi* sect of the Jains which was to a large extent a direct result of Muhammadan influence is also noticed. The explanation of the still continuing vitality of the Jain Church given at the end of the second chap-

ter is sufficient and satisfactory; but one cannot agree fully with the statement that an adamantine conservatism has been the strongest safeguard of the Jaina faith.

The importance of Magadha in the light of early Jaina history is stressed; and we are definitely told that Bimbisara, the Saisunāga, was definitely a follower of Nātaputta and his doctrines, "whatever may be the claims of the Buddhists about him." The Jaina account of Bimbisara's death is given to show that the Jainas were in the good books of Kunika, about whom the *Aupapātika*, the first *upāṅga* of their canonical literature, as well as the *Bhagavatī*, the *Uvāsaga-Dasāo*, the *Antagaḍa Dasāo* and other works have references. Jaina tradition also exempts Udāyin from the crime of parricide with which he is charged by the *Mahāvamsa*. Mr. Shah maintains that Hemachandra did not confuse Nandivardhana with Mahāpadma Nanda and identifies the Nandaraja of the Khāravela Inscription of Hāthigumphā as only Nanda I of the Jainas (or the Mahāpadma Nanda of the Puranas). He examines at length the Jaina tradition about Chanakya's revolution and Chandragupta Maurya and concludes that the date of Bhadrabāhu's *Nirvāṇa* exactly coincides with that of Chandragupta (cir 297 B.C.); while arguing that the Asokan *Dharma* contains nothing particularly Buddhistic and the edicts of the Emperor do not, *ipso facto*, mean that he was or had become a Buddhist, he says that the term 'Śramaṇa,' occurring in the edicts, distinctly refers to Jaina ascetics as well as Buddha monks and when Asoka referred to Buddhists alone, he always used the word *Samgha*. The first Swētāmbara contact with South India was established by Samprati; and the great schism is connected both with the migration of Bhadrabāhu and with the Suhastin-Mahāgiri tradition.

A full chapter is devoted by our writer to Jainism in the time of Khāravela of Kalinga who is stated to be the contemporary of Sri Sātakarṇi and Demetrios and of Bahasati-Mitra, here equated with Pushyamitra Sunga. Khāravela is stated to have attacked Magadha twice, in the second of which he recovered the image of the Jina of Kalinga which had been carried off by Nanda Raja. The reference in the inscription to Yāpa professors is explained as well as the term *Nishidi*, which denotes an ornamental tomb of a saint. Mr. Shah claims Vikramāditya of Ujjain, successor of Gardabhilla, as a great Jaina patron and maintains that the Mathura Inscription of Mahākshatrapa Śoḍāsa was dated in the Vikrama era, agreeing with Dr. Sten Konow. But the Kushāṇa inscriptions ranging from Śamvat 4 to 98 are dated A.D. 82-176. These inscriptions are shown to be important as disclosing particular aspects of the Jain church and also serving as

land-marks in the history of the Northern Jainas, during the epoch of Indo-Scythian rule. Two Gupta records at Mathura and in the Udayagiri Cave and the Kahāum Stone Pillar Inscription are discussed as throwing light on Jainism in the Gupta age. The tradition of *Kuvalaya-māla* tells us of Āçārya Harigupta of Sri Torarāya who is equated with Toramāna, the Hūṇādhipaṭi.

Harigupta and his pupil Devagupta are shown to belong to the Gupta royal family; and the coins of one, Harigupta, are, according to Allan, of the 5th century A.C. The suggestion is also made by Mr. Shah that it may be possible to identify Devagupta of the Jaina tradition with the Malwa ruler of that name mentioned in the *Harshacarita*. The two chapters at the end deal with Jaina literature and art. The former includes a survey of Swētāmbara literature, both canonical and non-canonical; and the latter is devoted to an account of the Jaina caves in Orissa, and in Girnar and the sculptural remains and mounds near Mathura. Mr. Shah is rightly cautious about disclaiming a special Jaina style of architecture and sculpture; but perceives a strange mixture of Greek and Indian elements not only in the Mathura sculptures, but also in the friezes of the Udayagiri caves. He devotes special attention to the description of the sculptural tablets, known as *Āyāgapatas* which were a prominent feature of ancient Jaina art. The bibliographical, illustrative and other equipment of the book is sumptuous and, perhaps a little bit, overdone. The typographical and other excellences call for special mention and illustrate the thoroughness characteristic of Father Heras and his school.

C. S. S.

RECENT INTERPRETATIONS OF THE POLITICAL HISTORY OF NORTHERN INDIA*

The Political History of Ancient India is now out in its third edition. It was first written in 1923, with a view to present an authentic chronological history of ancient India, the scope taking in the little-known and less-cared-for pre-Bimbisaran epoch which has been stretched back to the age of Parikshit and forms part I of the book. The II part brings the narrative down to the last days of Gupta Imperialism in the 6th century A.C. and the beginning of the 7th. The last book of the *Atharva-Veda*, the more ancient of the *Brahmana* books and the classical *Upanishads* have been made use of; and our author rightly holds the balance even between the views of Pargiter which would give excessive value to Kshatriya tradition whose date allowed of manipulation to serve dynastic ends and the value of Vedic tradition whose two strong points are its priority of date and freedom from textual corruption. His sequential treatment of the Kurus and the Vaidēhas and their contemporary states is followed by a notice of the political condition of the Deccan in the time of the later Vaidēhas, in the course of which he says that it might be that the name Mūchīpas became transformed into Mūshikas. The political history of the period between the fall of the Videhan monarchy and the rise of Anga, Kosala, Kasi and Magadha is based on the Puranic lists and Jain and Buddhist sources; and it is supplemented with an account of monarchy and its principal varieties, its household, civil and military services and the checks on its authority.

The second part of Dr. Raychadhuri's book—the Post-Bimbisaran History—is marked by a detailed and critical examination of the causes of the dismemberment of the Mauryan Empire and by views, different from the generally accepted ones, regarding the history and chronology of the Early Śātavāhanas, the Indo-Greeks and the Saka-Pahlavas. He rejects completely the theory of a Brahmanical revolution as the main

**Political History of Ancient India, from the Accession of Parikshit to the Extinction of the Gupta Dynasty*, by Dr. Hemchandra Raychaudhuri, Lecturer in History, Calcutta University (Third edition, revised and enlarged)—published by the University of Calcutta, 1932. pp. xix and 469.

The Dynastic History of Northern India (Early Mediæval Period)—with a Foreword by Dr. L. D. Barnett—by Dr. H. C. Ray, Lecturer in History and Sanskrit, Calcutta University—Vol. I—published by the University of Calcutta, 1931. pp. xl and 663.

cause of the Mauryan dismemberment which had really begun long before the raids of the Bactrians. He holds that Simukha should come after the Kanvas and Kharavela could not be a contemporary of Pushyamiitra Sunga, contrary to the views of Mr. Jayaswal, Rapson and others. The prevalence of Naga rule over a greater part of Northern and Central India in the 3rd and 4th centuries A.D. is noticed in some detail; and the history of the later Guptas is as clear as can be desired. Among the Appendices, there is a useful note on the chronological relations of Kanishka and Rudradaman I, in which he tries to refute the contention that Rudradaman's sway over Sindhu-Sauvira between 130 and 150 A.D. does not imply control over Sui Vihar and Multan and consequently Kanishka's sovereignty over Sui Vihar in the year 11 of an era starting from A.D. 128-129, is not irreconcilable with the rule of the Great Satrap in Sindhu-Sauvira at the same time. Another note examines the causes of the decline of the earlier Guptas; and the Appendices are all additions to this edition. The chronological list of the Trans-Vindhyan Kingdoms, Peoples and Dynasties and the synchronistic tables are highly valuable; and the bibliographical index helps ready reference.

A natural supplement to Dr. Raychaudhuri's book is the publication of Dr. H. C. Ray, which is the first of two volumes devoted to the dynastic history of Northern India during the period of transition between the decline of the Gurjara-Pratihara Empire of Kanauj and the Muslim conquest under Muhammad Ghūri and his slave-generals. This dynastic history is proposed to be supplemented by a third volume devoted to the treatment of minor dynasties, administrative, economic and social history, the origin of the Rajputs and the causes of Hindu decline. This volume is well-equipped with comprehensive bibliographical lists for each chapter, and clear and carefully-drawn maps for the history of each dynasty and a synchronistic table in the end. Dr. Ray is at some pains to prove that A.D. 647 being regarded as the beginning of a steady decline is not correct, that there was no general decline in everything from the close of the Harshan epoch, that the Gurjara-Pratihāra Empire of Kanauj rivalled that of the Guptas and was more extensive than that of the Puṣpabhūti and that the line between the ancient and mediæval periods is best drawn about 916 A.D. when the Pratihāra Empire began to break to pieces. The incidents of the three centuries that elapsed between 916 A.D. and the establishment of the Indo-Moslem Empire at Delhi under Kutbu'd-din deserve to be studied in great detail and with reference to the evidence of archæology and more reliable Hindu chronicles some of which have been recently discovered. Also, Dr. Ray would maintain that a critical study of these three centuries would enable the reader to grasp some of the forces

that vitally influenced Hindu society and to estimate, aright, the indebtedness of Turkish and Afghan administration to its Hindu predecessor.

Taking up the history of Sind first, Dr. Ray stresses on the part played by the Gurjaras in stemming the tide of Arab and Muslim expansion and on the barrenness of the region in serving as a political force or as a centre of missionary enterprise. From the 11th century the Arab was definitely replaced by the Turk as the dominant power in the lower Indus Valley whose fortune is traced down to the epoch of Akbar's conquest in 1591. In the second chapter, the fortunes of the obscure Shahis and the steps which gradually brought Islam into the Kabul valley are traced. The Turki Shahiyas and their successors, the Hindu Shahiyas, are shown in their unenviable position, pressed by formidable enemies; and Kallār, the Brahman founder of the Hindu Shahiya line, is identified with Kalhana's Lalliya Sahi. Dr. Ray shows how, in his campaign of 1008 A.D., Sultan Mahmud of Ghazna had not to confront a confederacy as is held by Ferishta, but merely encountered Anandapal. Trilochanpal, the son of Anandapal, made heroic efforts, even after a decisive defeat, to regain his kingdom. The Shahis remained a factor in the Kashmirian court, long after their kingdom was extinguished.

The author has made the fullest possible use of Kalhana (who finished his work in A.D. 1149-50) for the vigorous period of Kashmir history. The tracing of the decadence of the Hindu power till its extinction in 1339 is relatively thin and does not require any elaboration. In the construction of Nepal history from the time of Amsuvarman, much ingenuity has been displayed, particularly in the explanation of the references to Nānyadeva's conquest of the land and the consequent revolution in the political power of the Thākuris. The detailed history of the Nepal Valley is brought down to 1480. The history of Assam and of the Palas and the Senas is perhaps overfull; and the account of each important king is supplemented by a notice of his epigraphs. It is clearly brought out how the Gahadvalas of Kanauj faced the Senas in Magadha after the disappearance of the Palas. The history of Orissa, in its different dynasties like the Banjas, the Sulkis, etc., that of the Gahadvalas of Kanauj and the relations between the latter and the Rashtrakutas of Panchala close the present volume which ends with a notice of the later Gurjara-Pratihāras. In such a diffuse and detailed treatment, it naturally so happens that we forget the wood in the trees. But for sober and critical scholarship and interpretation the treatment of Dr. Ray is hard to beat.

UNIVERSITY PUBLICATIONS

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